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THE INFLUENCE OF DAVID KOLB'S LEARNING STYLE ON STUDENTS' BIOLOGY LEARNING ACHIEVEMENT

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Abstract: This study aims to know the effect of learning style on the biology learning achievement of class XI students of SMA Negeri 1 Sampolawa. This type of research is ex post facto through a quantitative descriptive approach. The sampling technique is saturated sampling. The sample in the study amounted to 80 students. Research data were obtained through questionnaires and documentation. The data analysis technique is descriptive statistical analysis and inferential statistics through a simple linear regression test. The results showed that descriptively the learning style tendencies owned by class XI students of SMA Negeri 1 Sampolawa were 23 students with Diverging learning styles with a percentage of 28.8%, Assimilating as many as 20 students with a percentage of 25.0%, Converging as many as 19 students with the percentage are 23.8%. The Accommodating is 18 students with a percentage of 22.5%. Based on the results of the inferential analysis, a significance value of 0.003 was obtained, which was smaller than the value of equal to 0.05, meaning that David Kolb's learning style had a positive and significant effect on students' learning achievement in biology.

Keywords: *David Kolb's Learning Style, Learning Achievement, Biology*

INTRODUCTION

Education is the principal pillar for the development and progress of a nation. Education as a deliberate and planned learning process is a long-term investment to produce more quality over time. Improving the quality of human resources relates not only to attitudes but also to knowledge and skills. The implementation of learning in schools is one of the profound things in producing high-quality future generations of the nation.

Students urgently need Scientific mastery is not only through study in school but also in daily life [1]. The different elements greatly influence the success or failure of the learning process and objectives involved. The learning process translates as an activity interaction involving elements including teacher and student to get the planned goals [2].

Biology learning in computing so that the students can critical thinking have high creativity so they can compete, and dare to make decisions quickly and accurately. It can make the students survive the intense competition in the digital age full of opportunities and challenges [3]. Biology as part of science provides a variety of learning experiences that play a vital role in various aspects of life and can support the development of students' potential to understand multiple concepts related to the life of creatures on earth. Students think that biology is a rote lesson that contains abstract material with difficult scientific names, so to overcome the problems teacher role is needed.

Teacher's as the deciding in the implementation of learning required to have various basic skills needed to support the success of the learning process. This ability can help teachers explore and find problems and find solutions to solve them. Understanding that each student is a unique individual and different from one another is one of the abilities that teachers must possess. One of the unique differences in learning is the student's learning style [4].

Learning style is the easiest way for someone to absorb, organize and process the information received [5]. Based on the results interview with class XI students of SMA Negeri 1 Sampolawa, available information that almost all students did not know their learning styles. Many theories and models, as well as instruments regarding learning styles, have been developed. One of them is David Kolb's learning style. David Kolb asserts that a person's orientation in the learning process is affected by four poles of tendencies, namely concrete experience (feeling/CE), reflective observation (watching/RO), abstract conceptualization (thinking/AC), and active experimentation (doing/AE). When these four trend poles are combined, they will produce four learning styles: diverging, assimilating, converging, and accommodating [6].

The individuals who occupied the feeling polar/CE learning through concrete experience prioritize sensitivity to feelings in dealing with others and can adapt and be more open in the face of change. The individuals who occupied the thinking polar/AC learn through logistical analysis with systematic planning to develop theories and ideas that are useful to address the problems they face. Furthermore, the individuals who occupied the observation polar (Watching / RO) emphasize the learning process

through observation so that in determining an opinion, they focus more on feelings. The individuals who occupied the action polar (Doing / AE) are more focused on the ability to do tasks, dare to take risks, and may affect others through the step [7]. Students have a diverging learning style if AC–CE and AE-RO are both negative as well as if AC–CE is positive and AE-RO is negative, then the student has an assimilating learning style. If AC-CE and AE-RO are both positive, then the student has a converging learning style as well as if AC – CE is negative and AE-RO is positive, then the student has an accommodating learning style [8].

The lack of knowledge about learning styles is a problem because it can indirectly affect the success of the learning process. Learning styles belong to the structural factors (learning approaches) are infected by several physicals, emotional, sociological, and environmental factors that can influence a person's level of success in learning. The achievement of student learning achievement is a tangible form of the success of a learning process. Student achievement can increase if one understands their learning style [9]. Learning achievement is an assessment of student ability expressed in the form of numbers, letters, symbols, or sentences that reflect the results that have been achieved by participants after they received learning experiences within a certain period [10].

Based on this description, it is necessary to research the effect of learning styles on the biology learning achievement of class XI students of SMA Negeri 1 Sampolawa. This research aims to find out how the influence of learning style on the biology learning achievement of class XI students of SMA Negeri 1 Sampolawa.

RESEARCH METHODS

This type of research is ex post facto through a quantitative descriptive approach. Ex post facto is research conducted to uncover the events that have taken place and then trace back to reinvent the factors that caused these events [11].

This study was conducted on an odd semester in November of the 2021/2022 academic year in class XI of SMA Negeri 1 Sampolava. The sampling technique used is saturated sampling. Saturated sampling is a sampling technique that uses all the population members as a sample [12]. The sample in this study amounted to 80 students.

Data in this study were collected through questionnaires and documentation. According to David Kolb (Diverging, Converging, Assimilating, and Accommodating), student learning styles were ordered using questionnaires. The questionnaire used went through a validation phase by experts, consisting of 42 statement items (26 positive statements and 16 negative statement items). The evaluation of the answers is rated with 0 and 1. The documentation serves to collect data on the learning success of the students in biology (report results).

The data analysis technique used is descriptive and infernal statistical analysis. Descriptive statistical analysis is used to describe the trend of students' learning styles. Inferential statistical analysis is used to determine the effect of learning style on students' learning achievement in biology, which is performed by the simple linear regression test previously preceded by a prerequisite test, namely the Kolmogorov-Smirnov test, to determine the normality of data.

The data is of normal distribution if the significance value obtained is higher than alpha value 0.05, but if the significance value earned is smaller or the same as 0.05, we could infer that data distribution is not normal. The results of the inferential statistical test are also based on the significance value. When earned If the significance value obtained is smaller to alpha value 0.05, it can be concluded that the X variable (learning style) has a positive and significant effect on the Y variable (learning achievement).

RESULT AND DISCUSSION

Learning styles are part of students' characteristics, and each student has different characteristics. Student characteristics are part of learning conditions, which influence strategies to improve learning outcomes [13]. The description of the learning style tendencies of the students of class XI of SMA Negeri 1 Sampolava can be found in the following table.

Table 1. Descriptive Statistics Test Results

		Frequency	Percent	Minimum	Maximum	Mean
Valid	Diverging	23	28.8	75.00	85.00	79.52
	Assimilating	20	25.0	75.00	85.00	78.85
	Converging	19	23.8	75.00	83.00	77.68
	Accommodating	18	22.5	75.00	81.00	77.33
	Total	80	100.0			

The descriptive statistics test results show that 80 students of class XI SMA Negeri 1 Sampolawa. The learning style most students have is diverging, which is comprised of 23 students with a percentage of 28.8%, assimilating learning style 20 students with a percentage of 25.0%, converging 19 students with a percentage of 23.8%, and the last is accommodating 18 students with a percentage of 22.5%. This result is at odds with previous research in which accommodative is students' most common learning style [14]. Most students' learning styles differ, while helpful is the learning style most common students have the least [15-16]. Students with diverging Learning Styles receive a minimum score of 75.00, a maximum score of 85.00, with a mean (average) score of 79.52. Students with the assimilating learning style achieve a minimum score of 75.00, a maximum of 85, and an average score of 78.85. The minimum score for students with the converging learning style is 75.00. The maximum score is 83.00, with an average score of 77.68. For students with the accommodating learning style, the minimum score is 75.00, with a maximum score of 81.00 and an average of 77.33. The minimum score that each student achieves with different learning styles is the same, based on the KKM score for biology subjects, which is 75

The learning achievement scores of each student with different learning styles can be seen in the following table.

Table 2. Student Achievement Based on Learning Style

Learning Style	Learning Achievement	
	A	B
Diverging	14	9
Assimilating	10	10
Converging	6	13
Accommodating	5	13

Table 2 shows that the A score is dominated by students with diverging learning styles, followed by students with assimilating, converging, and Accommodator learning styles. The combination of feeling and observation is called the diverging learning style. Students with diverging learning styles can imagine and see concrete situations from various angles and then relate them to something complete and comprehensive. The approach used under any circumstances is to 'observe' not 'act'. The weakness is that students with diverging learning styles become bored quickly if the time to understand and solve problems is long enough [17]. The ability of students to see things from different angles shows that students use more than one pole of learning style tendencies in the information processing process. It means that feelings, thinking, observation, and acting overall are involved. It can cause students with divergent learning styles to get many A's values.

Assimilator is the second most common learning style among students, followed by Converger and Accommodator learning styles. The assimilator style is a combination of thinking and observing. Students with the Assimilator learning style have the advantage of understanding different information and summarizing it in a logical, concise, and clear format. The disadvantages are that they care less about other people and prefer abstract and theoretical concepts and ideas.

The converging learning style is a combination of thought and action. Students with a converging learning style excel at finding the practical function of different theories and ideas have good problem-solving and decision-making skills. I prefer more technical (application) tasks than social, human, and interpersonal relationships.

The Accommodator style is a combination of feelings and actions. Students with an accommodative learning style interpret experiences based on their understanding and apply their experiences to active experimentation. The best learning skills come from real-world experience, and problem-solving comes from trial and error. The weakness of this learning style is impatience and wanting to act immediately, always wondering what if [18]. Students more act on impulse compared to logical analysis. It can cause students with accommodating learning styles to get minimal of A's value.

After the descriptive test has been shown off, it proceeds to the prerequisite test, namely the data normality test, which aims to determine whether distributed the data normally or not.

Table 3. Normality Test Results

One-Sample Kolmogorov-Smirnov Test

	Unstandardized Residual
N	80
Asymp. Sig. (2-tailed)	.155

a. Test distribution is Normal

Significance value obtained based on the normality test results higher than 0.155, an alpha value of 0.05. It means that the research data is distributed normally. Then proceed to the simple linear regression test. The results of inferential statistical tests to determine the effect of learning styles on student achievement are shown in Table 4.

Table 4. Inferential Statistics Test Results

Model	Sig.	α
Learning Style Constant	0.003	0.05

Based on the results of the inferential test, it is known that the significance value obtained is smaller than the alpha's value which is 0.003. These results indicate that their learning style strongly influences student achievement. Learning style is a stage to be experienced by students in receiving, absorbing, and processing the information imparted by the teacher in the learning process, so understanding the learning style they have will help students choose the right one to find a learning method.

One of the factors affecting student performance is learning style habits, which are factors that come from within the student [19]. The results of this study are consistent with the statement that the learning style of David Kolb can influence students to improve learning performance [20]. This result is supported by previous research that concluded that David Kolb's learning style impacts students' academic performance [21]. David Kolb's learning style was chosen because this learning style focuses on the process of information processing. Biology contains a lot of abstract stuff with difficult scientific names, which will be easier to learn if all the skills are in the students, starting with feeling, thinking, observing, and doing. Based on research data, whole students have all the trends of David Kolb's learning style, which means that students include all aspects of the learning process necessary for processing information. However, when the scores obtained for each of these tendencies are combined, only one learning style is brought.

Learning styles are essential to know and understand not only for students but also for teachers. After they know and understand their respective learning styles, the process of information absorption by the students can take place optimally in the later learning process. Students with different learning styles achieve different learning outcomes. It further proves that the acquisition of student achievement is strongly dependent on learning styles [22]. By understanding students' learning styles, we hope teachers can facilitate classroom learning according to students' preferred learning styles. If the teacher teaches in a less than desirable style, students will feel uncomfortable. On the other hand, if teachers only teach with certain learning styles that only students prefer, this can result in these students not developing the mental agility they need to excel in class [23].

Due to the differences in the learning styles of each student, a teacher must be not only a facilitator but also a motivator and an expert to deliver quality learning and successfully achieve the set learning goals.

CONCLUSION

Based on the results of the descriptive analysis, it is known that the students of class XI SMA Negeri 1 Sampolava have four learning style tendencies, namely Diverger up to 23 students, Assimilator up to 20 students, Converger up to 19 students, and Accommodator as up to 18 students. The results of the inferential statistical test show that the significance value obtained is 0.003, which is less than the value equal to 0.05. It can be concluded that the learning style has a positive and significant effect on the biology learning performance of class XI SMA Negeri 1 students Sampolava.

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