Analysis of high school students' self-confidance in biology learning

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Article Info	ABSTRACT
	Self-confidence is one of the important aspects that every individual must possess in life. This research aims to analyze the self-confidence of students in biology learning at High School. This research uses a quantitative approach with a descriptive method. The population in this study were X MIPA class students of SMA 3 Polewali in West Sulawesi with a sample of 116 students. The research instrument used in this study is a non-test instrument, namely a self-confidence questionnaire. This instrument is based on four indicators of students' self-confidence in learning biology: believing in one's abilities, making independent decisions, having a positive self-concept, and being willing to express opinions. The findings obtained from this study indicate a percentage of 65.0% or state that the majority of students at SMA 3 Polewali in West Sulawesi have self-confidence. Students' confidence has the potential to increase motivation and student learning outcomes in biology learning by integrating innovative learning strategies, allowing most students to participate in biology teaching and learning activities effectively and optimally, thus achieving educational objectives.

INTRODUCTION

The curriculum is a set of plans that must be implemented through learning (Effendi, 2019). Learning must be challenging and foster independence and self-confidence for curriculum goals to be achieved effectively and efficiently (Mulyasa, 2022). The goals of the 2013 National Education Standards are to enhance the quality of learning by involving students (Ratulangi & Arsyad, 2016); this involvement can enhance students' self-confidence. Self-confidence becomes crucial, as success in the learning process can be influenced by self-confidence (Vandini, 2016). Biology is a complex subject, related to students' everyday lives in the context of science, the environment, technology, and society (Hardianto,2023). Biology learning is a discipline that emphasizes direct experiences.

Thus, students should be encouraged to develop several procedural skills to explore the surrounding environment (Ziraluo, 2020).

Biology learning has the characteristics of procedural skills, which include primary and integrated skills (Lase, 2019). Biology is a science whose extensive scope encompasses all living things across the Earth's surface (Van, 2017). Due to the vast scope of biological science, branches of biology were formed to facilitate more accessible learning. (Bustami, 2017). As technology develops, efforts continue to be made to achieve innovative and creative learning. Therefore, students are expected to have self-confidence to achieve active and innovative learning. (Kısoglu, 2018). Educators need to assist high school students in growing self-confidence (Aza et al., 2019).

The term self-confidence originates from English and can be translated as "confidence in oneself." Self-confidence is an individual's belief in their abilities, leading to a sense of contentment with themselves. (Uqshari, 2005). Self-confidence is an essential psychological construct influencing students' performance (Walsh et al., 2021). Self-confidence is the belief in one's abilities, causing the individual in question to act without hesitation. They can feel free to engage in enjoyable activities and take responsibility for their actions. They exhibit warmth and politeness when interacting with others, are capable of accepting and respecting others, have a drive for achievement, and can recognize their strengths and weaknesses (Lauster, 2002).

Self-confidence helps individuals achieve their goals and creates a positive self-image that supports students' success in various experiences (Johnson et al., 2020). Suprobowati et al (2021) stated the importance of self-confidence and emphasized that students must succeed in their learning. Self-confidence assists students in being able to do, complete, and get satisfactory learning results (Karkono et al., 2022). When students with high self-confidence possess indicators such as believing in their abilities, acting independently in making decisions, valuing themselves and their efforts, showing enthusiasm when expressing opinions in discussions, and daring to face challenges (Hendriana et al., 2018), ultimately, the attained learning achievements are also more maximal. In line with what was revealed by (Kloosterman, 1988), success and failure achieved by students are influenced by motivation, self-confidence, and belief in the effort made in learning biology. Furthermore, Bandura & Locke (2003) stated that one's belief in self-confidence can significantly impact confidence in motivation and performance.

Sumarmo et al. (2017) describe four leading indicators for measuring self-confidence, namely: 1) belief in one's abilities, 2) acting independently in making decisions, 3) having a positive self-concept, and 4) daring to express opinions. Self-confidence should be a concern in the learning process because, according to the study results, less than 50% of students still need self-confidence. Low-confident students tend to show pessimism and dissatisfaction with themselves (Kristanti & Eva, 2022). Based on the explanation described above, it is crucial to have a confident attitude.

By having self-confidence, students will be active in the implementation of learning in the classroom; furthermore, students will be more optimistic about their ability to solve problems in learning, especially in the context of biology education. This study aims to conduct a more in-depth analysis of students' self-confidence in high school. The results of this study are expected to provide information about students' self-confidence so that educators can enhance their students' self-confidence in the learning process, which is anticipated to improve students' academic achievements. The novelty of this research lies in measuring students' self-confidence in the biology learning process at SMA 3 Polewali, Polewali Mandar district, West Sulawesi.

RESEARCH METHODS
Research Design
The analysis of self-confidence is conducted using a quantitative approach to assess the level of students' self-confidence. The method used in this research is quantitative research with a

descriptive method. The research instrument used in this study is a non-test instrument, namely a self-confidence questionnaire.

Population and Samples

The population in this study consists of students from the X MIPA class at SMA 3 Polewali, West Sulawesi, with a total population of 116 students. For small populations with N = 100 or fewer, the entire population can be used as the sample (Leddy, 2019). Therefore, in this research, the sample size is 116 students.

Instruments

The test instrument used in this study utilizes a non-test instrument, which is a self-confidence questionnaire consisting of 26 statement items or questions with four answer choices: Always (SL), Sometimes (KK), Ever (P), and Never (TP). This instrument has been validated with validity values ranging from 0.246 to 0.418 and a Cronbach's alpha value of 0.686 for reliability. Subsequently, data collection in this research was carried out by distributing the self-confidence questionnaire to students of SMA 3 Polewali in West Sulawesi, which was distributed using Google Forms. The self-confidence questionnaire in this study comprises four indicators: 1) belief in one's own abilities, 2) acting independently in decision-making, 3) having a positive self-concept, and 4) daring to express opinions.

Procedures

The research procedure is established with the following steps: 1) determining the location and schedule of the research; 2) determining the research population and sample; 3) defining the research variables; 4) preparing the research instrument, which is the students' self-confidence questionnaire; 5) validating the research instrument; 6) collecting research data from the research population; 7) data processing; 8) compiling the research results report. The research flow chart in Figure 1.
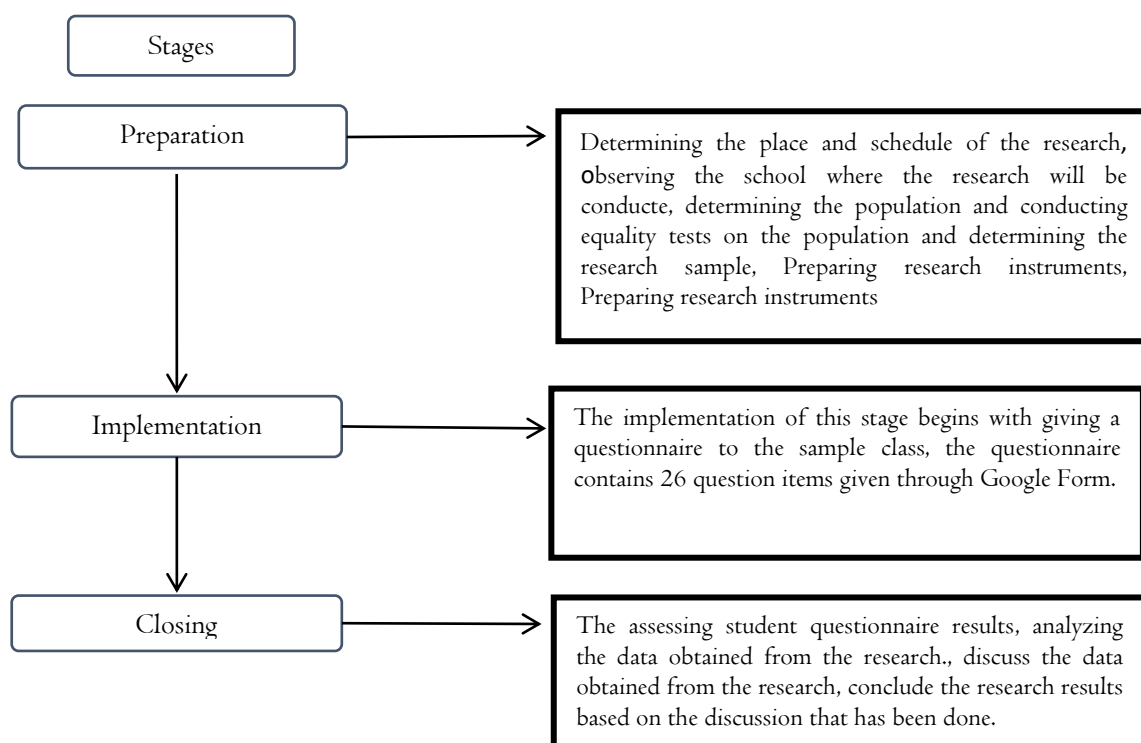

Figure 1. Research flowchart

Data Analysis

The obtained data will then be analyzed by determining the percentage of student responses or the results of student reactions, which then each question item in the questionnaire will be descriptively analyzed, or the data collected will be converted into attitude scales by the Likert scale (Lestari & Yudhanegara, 2017). The formula used to determine the percentage of student responses for each statement is as follows:

$$P = \frac{f}{n} \times 100\%$$

Description:
P : Percentage of student responses or reactions
F : Frequency of student responses or reactions
n : Number of students who answered the question.

Next, to obtain the percentage for each question item or statement, it will be interpreted based on the criteria in the following Table 1.

Table 1. Criteria for Interpreting Questionnaire Response Percentages

Criteria	Interpretation
P= 0%	None
0% <P< 25%	Small portion
25% ≤ < 50%	Almost half
P= 50%	Half
50% < P< 75%	Most
75% ≤ < 100%	Almost all
P=100%	Whole

After obtaining the percentage for each question item or statement, the next step is determining the average percentage. Determine the average percentage of student responses per statement or question item and overall based on the formula in Table 2.

Table 2. Formula to Calculate Average Percentage

The average number of questions question.	The overall average of answers.
$\bar{P_i} = \frac{\sum f_i P_i}{n} \times 100\%$	$\bar{P_T} = \frac{\sum \bar{P_i}}{k} \times 100\%$

Description:
Pi : Average percentage of student responses for statement i
Fi : Frequency of student response choices for statement i
Pi : Percentage of student response choices for statement i
N : Number of students who answered the statement
P$_T$: Overall average percentage of student responses
K : Number of statement items

RESULTS

The conducted research, using a questionnaire, has four indicators of students' self-confidence in biology, along with four response options: Always (AL), Sometimes (S), Occasionally (O), and Never (N). Based on the obtained research results, the percentage of students' self-confidence in biology is presented in the following Table 3.

Table 3. Percentage of Biology Students' Self-Confidence Attitude Scale

| No.	Indicator	Many Statements	Total Score	Mean	Percentage	Description
1	Believing in one's abilities	7	217	55.0	70.0%	Most
2	Making independent decisions	10	310	71.0	100.0%	Whole
3	Having a positive self-concept	5	155	70.75	50.0%	Half
4	Being willing to express an opinion	4	124	67.0	40.0%	Almost half
	Total	26	668	65,.93	65. 0%	Most

Based on the table above, it can be seen that the average percentage of student responses on the questionnaire/scale of students' self-confidence attitudes indicates that the majority of students at SMA 3 Polewali in West Sulawesi have confidence in biology, with a percentage of 65.0%. The results of the percentage of students' self-confidence in biology can be seen in the following visual statistical information.
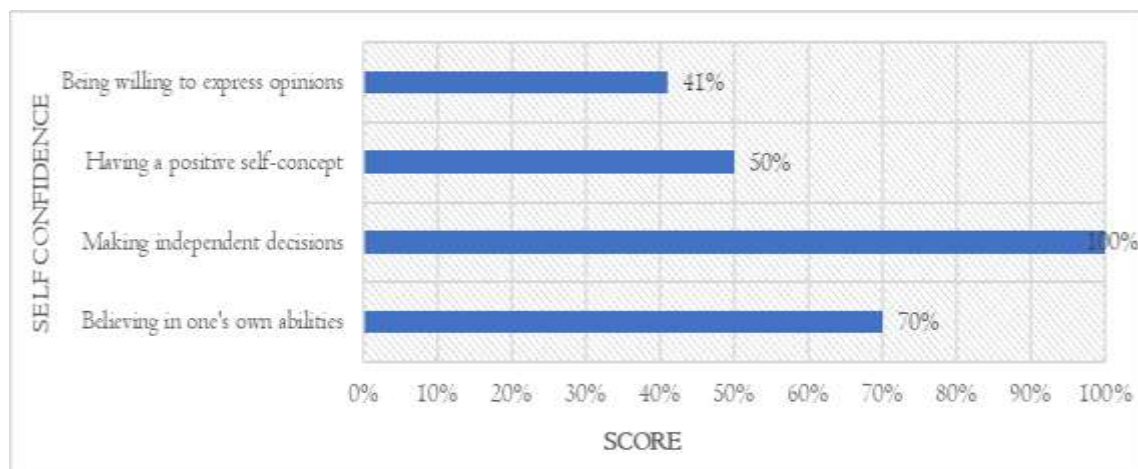
**Figure 2.** Percentage of Biology Students' Self-Confidence Scale

Based on Figure 1, the percentage of biology students' self-confidence indicators is obtained. For the indicator of believing in one's abilities in learning biology, the result shows a percentage of 70.0%. The indicator of acting independently without the help of others in making decisions in biology learning obtained a percentage of 100.0%. Furthermore, for the indicator of having a positive self-concept in biology learning, the result is 50.0%, and finally, for the indicator of being brave to express opinions in biology learning, the result is 41.0%. In this study, the questionnaire results explain that the majority of students have self-confidence in their abilities in learning biology, can act independently in making decisions in biology learning, have a positive self-concept in biology learning, and are willing to express opinions in biology learning. Explanations of the questionnaire results obtained from 31 students who answered Always (AL), Sometimes (S),

Occasionally (O), and Never (N) statements based on the self-confidence indicators of biology students can be seen in the following diagrams.
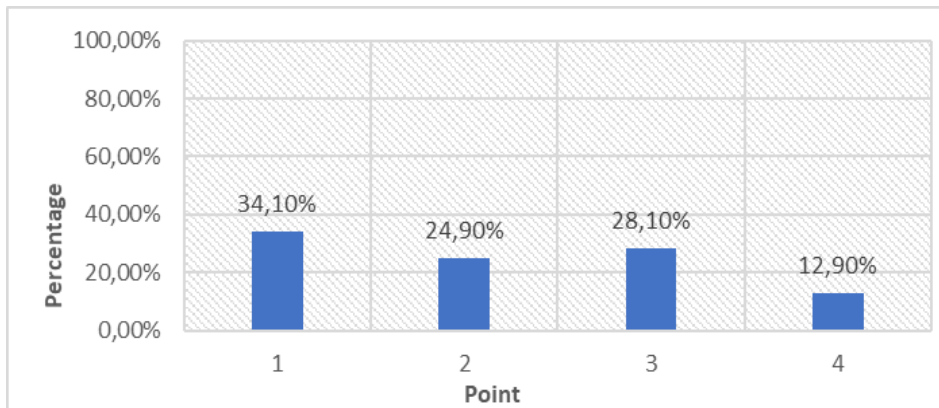

Figure 3. Percentage of indicators of believing in one's abilities

Analysis of the questionnaire responses from students on the indicator of having self-confidence in their abilities in learning biology reveals the following percentages: 34.1% for point one, 24.9% for point two, 28.1% for point three, and 12.9% for point four. Based on the questionnaire results obtained, it shows that the majority of students have confidence in their abilities in learning biology.
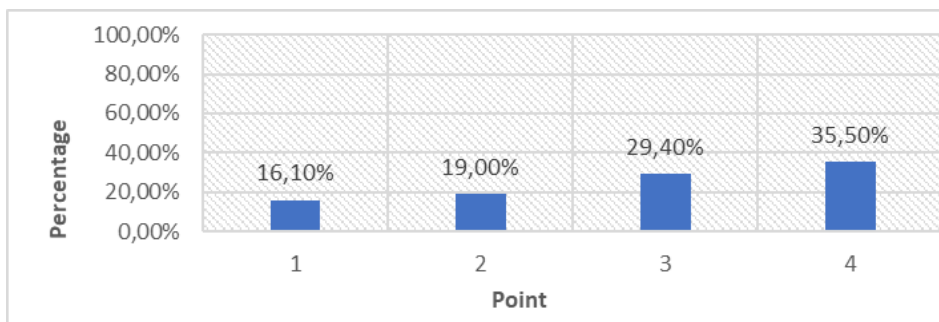
Figure 4. Indicator of acting independently in decision-making

Analysis of the questionnaire results from students based on the indicator of making independent decisions in learning biology shows the following percentages: 16.1% for point one, 19.0% for point two, 29.4% for point three, and 35.5% for point four. Based on the questionnaire results obtained, indicates that the majority of students make independent decisions when learning biology.
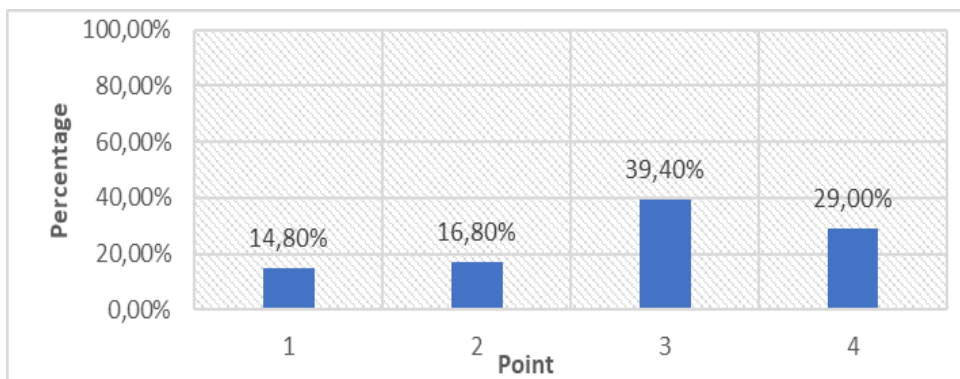
Figure 5. Indicator of having a positive self-concept

Analysis of the questionnaire responses from students based on the indicator of having a positive self-concept in learning biology reveals the following percentages: 14.8% for point one, 16.8% for point two, 39.4% for point three, and 29.0% for point four. Based on the questionnaire results obtained, it indicates that the majority of students have a positive self-concept in learning biology.
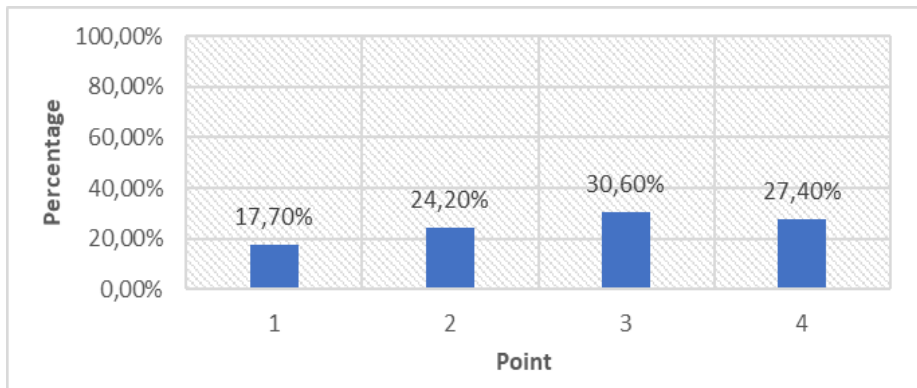

Figure 6. Indicator of being brave to express opinions

Analysis of the questionnaire results from students based on the indicator of being willing to express opinions in learning biology reveals the following percentages: 17.7% for point one, 24.2% for point two, 30.6% for point three, and 27.4% for point four. Based on the questionnaire results obtained, indicates that the majority of students are willing to express their opinions about learning biology

DISCUSSION

Self-confidence can grow and develop well when the environment supports and facilitates it (Apriliarini, 2015). Analysis of the questionnaire results from students based on the indicator of having self-confidence in their abilities in learning biology shows that the majority of students have confidence in their abilities in learning biology. Therefore, by having confidence in their abilities, students will be able to solve biology problems and be confident in finding solutions to those problems. This aligns with what Das Salirawati stated (Tanjung & Amelia, 2017), that self-confidence is a belief in one's abilities and viewing oneself as an individual who relies on oneself.

Furthermore, the analysis of the questionnaire results based on the indicator of making independent decisions in learning biology shows that the majority of students make independent decisions when studying biology. Therefore, by having the ability to make independent decisions, students will be capable of making decisions on their own without the assistance of others. This is in line with what Lauster mentioned (Ulfa et al., 2018) that one of the characteristics of a confident student is the ability to make decisions independently without the need for external assistance, and they have confidence in the actions they take.

Additionally, the analysis of the questionnaire results based on the indicator of having a positive self-concept in learning biology shows that the majority of students have a positive self-concept in learning biology. Therefore, by having a positive self-concept, students will always approach problems in biology with an optimistic mindset. This is consistent with what Lauster mentioned (Amri, 2018) that one aspect of self-confidence is having an optimistic attitude, which means having a positive outlook on oneself in all aspects.

Finally, the analysis of the questionnaire results based on the indicator of being willing to express opinions in learning biology shows that the majority of students are willing to express their opinions when learning biology. Therefore, by being willing to express their opinions, students will

feel comfortable asking their teachers about biology problems they don't understand, and this will help them resolve similar issues if they arise. This is in line with what Lauster expressed (Noviyana et al., 2019) that one characteristic of students with self-confidence is the willingness to express their opinions, indicating that students can express themselves without coercion.

Low self-confidence is influenced by several factors, both external and internal. Internal factors include self-concept, self-esteem, physical condition, and life experiences, while external factors include education, environment, and life experiences (Apriliarini, 2015). Self-concept, according to Sumarmo (2017), begins with the development of self-concept obtained from social interactions within a group. Positive self-concept forms positive self-esteem. Physical condition changes also affect self-confidence. Physical conditions such as obesity, physical disabilities, or impaired senses are visible deficiencies that can lead to feelings of worthlessness and insecurity. Life experiences can both boost and diminish one's self-confidence. Mulyasa (2022) states that past experiences are crucial for developing a healthy personality.

Education plays a role as well. Sumarmo (2017) suggests that lower levels of education can make individuals feel inferior to those who are more knowledgeable, while individuals with higher education tend to be more independent and not rely on others. These individuals can meet their own needs with confidence and strength while considering the situation realistically. Work can also boost creativity, independence, and self-confidence. Satisfaction and pride come from developing one's abilities. (Kusuma, 2005) Environment and life experiences are also influential. A supportive and facilitating environment fosters the growth and development of self-confidence (Apriliarini, 2015).

The "Brave to Express Opinions" indicator is important to cultivate and enhance. Some students prefer to be chosen by teachers to explain material in front of the class and may hesitate to step forward and speak in front of the class due to feeling that others are more capable. This is why this indicator has the lowest score. Other factors contributing to students' reluctance to participate include lack of understanding of the material, unreadiness, and lack of concentration due to external influences (Setiyorini, 2016). Learning concentration is also influenced by the learning environment, methods, or models used (Setyani & Ismah, 2018).

Warmth and politeness in interactions, both inside and outside of learning, getting along with peers, participating in extracurricular activities, and the like, reflect students' understanding of life and their surroundings. Heris (2014) explains that students with self-confidence are better at valuing others and are less likely to blame others, as they believe everyone can develop themselves. This affects learning outcomes, as learning outcomes involve positive changes such as knowledge, attitude, and skills gained after the learning process (Komari Pratiwi, 2015). Efforts to increase students' confidence in learning biology include providing motivation and appreciation for students' work. Additionally, you can engage with students while they are working on assigned tasks by walking around the classroom and stopping to communicate with students about the tasks given, thereby fostering students' courage to ask questions. Furthermore, encourages students to participate in extracurricular activities available at the school (Apriliarini, 2015).

CONCLUSION

Based on the data analysis presented in the results and discussion above, it can be concluded that students have confidence in learning biology. This can be seen from the results of analyzing students' questionnaire answers on each indicator, namely confidence in their abilities, the ability to make independent decisions, having a positive self-concept, and the willingness to express opinions. Therefore, it can be concluded that the results of the student confidence questionnaire in learning biology show that most students at SMA 3 Polewali have confidence in learning biology. Students' confidence has the potential to increase motivation and student learning outcomes in biology

learning by integrating innovative learning strategies, allowing most students to participate in biology teaching and learning activities effectively and optimally, thus achieving educational objectives.

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