

## Students' Self-Efficacy Towards Biology Subjects

Mucharommah Sartika Ami<sup>1\*</sup>, Cendy Dwi Aulia<sup>2</sup>, Anggun Wulandari<sup>3</sup>

<sup>1,2,3</sup>Biology Education, Universitas KH. A. Wahab Hasbullah

\*Email: [msartika@unwaha.ac.id](mailto:msartika@unwaha.ac.id)

---

### ABSTRACT

*This study aims to analyze the level of students' self-efficacy towards biology subjects at MA Ghozaliyah. This descriptive study with a quantitative approach uses a questionnaire as a data collection tool. The sample in this study was 56 students in grades X, XI, and XII who were selected using a purposive sampling technique. Data analysis was carried out descriptively by finding the mean and mode values to determine the level of student self-efficacy criteria. The results of the study revealed that most MA Ghozaliyah students have a high level of self-efficacy towards biology subjects. This is indicated by a mean value of 68,125 and a mode in the score range of 66 – 72.*

**Keywords:** *Self-Efficacy; Biology Subjects; Students; Quantitative Descriptive Study*

---

### INTRODUCTION

Biology is a compulsory intracurricular subject for senior high school students, both in the 2013 curriculum and the independent curriculum. Biology lessons for senior high school in the current independent curriculum contain a shorter and more concise scope of material compared to the previous curriculum. The subject matter taught is only essential material with a cognitive level up to C6, thus requiring innovation and creativity from teachers in designing and managing learning for students (Lestariyanti & Listyono, 2024).

Teachers need to understand student characteristics so they can design and implement learning that suits student needs. One of the characteristics of students that teachers need to know is self-efficacy. According to Bandura, self-efficacy is an individual's belief in their ability to organize and complete certain tasks (Avipah, 2023). Self-efficacy is essential for every student to have confidence in their abilities, so that no matter how difficult the task they are given, they feel confident they can complete it (Nurhijatina & Rosikh, 2022). Self-efficacy is also known to play a significant role in increasing students' learning motivation (Ramandha & Laili, 2025).

Students' self-efficacy can be determined through surveys using questionnaires or interviews. The researcher conducted interviews with biology teachers at MA Ghozaliyah regarding the identification of students' self-efficacy in biology subjects. The interview results revealed that teachers had never identified students' self-efficacy, either through questionnaires or interviews with students. However, teachers feel the need to know their students' level of self-efficacy. Therefore, we conducted this study to measure the level of self-efficacy of students at MA Ghozaliyah, especially in the subject of biology.

This research location was chosen because it implements two curricula: the 2013 curriculum for grade XII and the independent curriculum for grades X and XI. Furthermore, this school has relatively limited infrastructure to support biology learning. The researchers wanted to determine students' self-efficacy in biology lessons under these learning conditions.

### METHOD

This research is a descriptive study with a quantitative approach. Researchers conducted interviews with biology teachers as a form of need analysis. Data collection used a questionnaire with an instrument consisting of 20 statements with five response options (strongly disagree, disagree, somewhat agree, agree, or strongly agree). Figure 1 shows the form of the instrument used in this study.

**Student Self-Efficacy Questionnaire**

**A. Introduction**

You are requested to respond to the statements in point C honestly and sincerely. Your responses will not affect your biology grade. You can respond with: strongly agree (SS), agree (S), somewhat disagree (KS), disagree (TS), or strongly disagree (STS) to each statement.

**B. Respondent Identity**

Full name : .....  
 Gender : male / female (cross the unnecessary ones)  
 Class : X / XI / XII (circle the appropriate ones)

**C. Statement Points**

Put a check mark (√) in the response column that matches your opinion!

No.	Statement	Response				
		SS	S	KS	TS	STS
1.	I am confident that I have good abilities in biology lessons.					
2.	I am confident in my answers when answering biology questions.					
3.	I feel happy when I do biology problems.					
4.	I feel happy to study biology.					
5.	I feel satisfied with my abilities in biology.					
6.	I feel capable of competing with other students in biology subjects.					
7.	I am confident that I can get a higher biology score than my other friends.					
8.	I am able to answer biology questions independently without the help of friends.					
9.	I am able to provide assistance to friends who have difficulty learning biology.					
10.	I got good grades on various biology assignments and tests.					
11.	I am able to understand various biology materials.					
12.	I can quickly understand the new material taught by the biology teacher.					
13.	I feel confident asking the teacher questions when studying difficult biology material.					
14.	I find biology a scary subject.					
15.	I feel lazy to study biology.					
16.	I feel lazy to read the material in biology lessons.					
17.	I find biology questions difficult to work on.					
18.	I use online media as an additional reference for studying biology.					
19.	I have extra study time outside of class to study biology.					
20.	I do biology practice questions outside of assignments or tests at school.					

**Figure 1** Research Instrument

The five response options were converted into scores, with a score of 1 for the most negative response and a score of 5 for the most positive response. The sample involved in this study was determined based on the purposive sampling technique, namely 56 students from grades X, XI, and XII at MA Ghozaliyah. The data were analyzed descriptively to determine the level of student self-efficacy based on the criteria in Table 1.

**Table 1** Student Self-Efficacy Level Criteria

Score Interval	Criteria
36 – 45	Very low
46 – 55	Low
56 – 65	Adequate
66 – 75	High
76 – 86	Very High

## RESULT AND DISCUSSION

The research was conducted involving 56 students of grades X, XI, and XII at MA Ghozaliyah at the beginning of the even semester of the 2025/2026 academic year.

### Result

The data collected from the respondents is presented in the form of a frequency distribution in Table 2. The mode in the data is a score range of 66 – 72 with a frequency of 17. The mean of the data is the result of dividing the  $\sum fx$  by the number of samples, which is 68,125. The average value is included in the high-level self-efficacy criteria. The lowest score obtained was 52, which is a low criterion, and the highest score was 86, which is a very high criterion.

**Table 2** Student Self-Efficacy Data

Score Interval	Frequency (f)	Median Value (x)	fx
52 – 58	10	55	550
59 – 65	11	62	682
66 – 72	17	69	1173
73 – 79	12	76	912
80 – 86	6	83	498
N = 56			$\sum fx = 3815$

### Discussion

The level of student self-efficacy in this study was determined based on the scores obtained from the student response questionnaire. The questionnaire consisted of 20 statements with five response options. 16 of the statements were positive, and 4 were negative (numbers 13 – 17). Positive statements, if they receive a response of strongly agree, will be converted into a score of 5, and if they receive a response of strongly disagree, will be converted into a score of 1. Negative statements, if they receive a response of strongly agree, will be converted into a score of 1, and if they receive a response of strongly disagree, will be converted into a score of 5.

The scores given by the student respondents varied; the lowest score was 52, which met the criteria for low self-efficacy, and the highest score was 86, which met the criteria for very high self-efficacy. This shows that there are no students who have very low self-efficacy. The mean of all respondents' scores reached 68,125, which meets the criteria for high self-efficacy. The mode of the collected data also meets these criteria, so it can be said that the majority of MA Ghozaliyah students have a high level of self-efficacy in biology. The interesting thing about this finding is that students still have a high level of self-efficacy even though their learning facilities and infrastructure are inadequate.

Students who have high self-efficacy tend to set higher goals for themselves, exert more effort and persistence in pursuing goals despite difficulties or obstacles, and tend to perform better academically than peers who have lower self-efficacy (Honicke et al., 2023). Previous research revealed that the higher the student's self-efficacy, the higher the learning outcomes obtained (Salsabila & Hasmidyani, 2025). Other previous research also shows that there is a significant positive relationship between academic self-efficacy and self-regulation in learning (Nofera et al., 2025). Self-efficacy can influence students' choice of assignments, effort, persistence, and achievement, compared to students who are unsure of their learning abilities. Students who are confident in their ability to complete the task are better prepared to participate, work hard, and persevere in the face of adversity.

The level of self-efficacy will be influenced by: (1) the extent to which learners attribute their achievements to their own actions; (2) indirect experience, where one observes others who are similar achieving success; (3) social persuasion, which in a classroom context is most likely to come from the teacher in the form of comments emphasizing to learners that they have the skills needed to overcome perceived difficulties in challenging tasks; and (4) emotional state, this includes feelings of fatigue, stress, and tensions (Graham, 2022). These factors need to be paid attention to by teachers to help students

improve their self-efficacy.

This research has not revealed with certainty what factors cause high or low levels of student self-efficacy. Further research is expected to examine this issue. Identification can be conducted through in-depth interviews with students with varying levels of self-efficacy, thus understanding why students have low or high self-efficacy. In addition, research can also be conducted on the relationship between the quality of learning facilities and infrastructure and student self-efficacy, so that it can be determined whether the two factors influence each other.

## CONCLUSIONS

The level of self-efficacy of MA Ghozaliyah students in biology subjects is classified as high based on a mean value of 68,125. These results show that students have the potential to have high motivation in learning biology. Teachers can use this data to develop learning plans that support students' learning motivation, thereby helping students achieve optimal learning outcomes. Self-efficacy surveys should be conducted at least once each semester to update the data, making it more relevant for teachers and students.

## REFERENCES

- Avipah, P. N. (2023). Self-efficacy dan hubungannya terhadap karakteristik siswa smp pada pembelajaran matematika. *Proximal: Jurnal Penelitian Matematika Dan Pendidikan Matematika*, 6(1), 243–248. <https://doi.org/10.30605/proximal.v5i2.2265>
- Graham, S. (2022). Self-efficacy and language learning – what it is and what it isn't. *The Language Learning Journal*, 50(2), 186–207. <https://doi.org/10.1080/09571736.2022.2045679>
- Honicke, T., Broadbent, J., & Fuller-Tyszkiewicz, M. (2023). The self-efficacy and academic performance reciprocal relationship: the influence of task difficulty and baseline achievement on learner trajectory. *Higher Education Research & Development*, 42(8), 1936–1953. <https://doi.org/10.1080/07294360.2023.2197194>
- Lestariyanti, E., & Listyono. (2024). Analysis of learning achievements in the biology subject phase E and phase F in the Merdeka Curriculum. *Spizaetus: Jurnal Biologi Dan Pendidikan Biologi*, 5(3), 384–394. <https://doi.org/10.55241/spibio.v5i3.390>
- Nofera, F., Pismawenzy, & Oktavia, I. A. (2025). Efikasi diri akademik dengan pengaturan diri dalam belajar pada siswa. *Psikobuletin: Buletin Ilmiah Psikologi*, 6(2), 53–63.
- Nurhijatina, H., & Rosikh, A. (2022). Pengaruh self-efficacy dan motivasi belajar terhadap prestasi belajar siswa kelas v mi nw kawo. *Ēl-Midad: Jurnal PGMI*, 14(2), 197–213.
- Ramandha, J., & Laili, N. (2025). Self-efficacy and independent learning in students' learning motivation. *Indonesian Journal of Education Methods Development*, 20(4), 1–11. <https://doi.org/10.21070/ijemd.v20i4.935>
- Salsabila, S., & Hasmiyani, D. (2025). Pengaruh efikasi diri (self efficacy) terhadap hasil belajar ekonomi siswa kelas xi ips sma negeri 7 Palembang. *Journal of Economic Edu*, 6(1), 81–89. <https://doi.org/10.36085/jee.v6i1.8170>