

# Students' Self-Efficacy on Biology Lesson of Senior High Schools in Bengkulu City, Indonesia

1<sup>st</sup> Apriza Fitriani

*Postgraduate Student of Universitas Negeri Malang; Biology Education Department*  
*Universitas Negeri Malang;*  
*Universitas Muhammadiyah Bengkulu, Indonesia*  
 Malang; Bengkulu, Indonesia  
 aprizafitriani@umb.ac.id

2<sup>nd</sup> Siti Zubaidah

*Biology Department*  
*Universitas Negeri Malang*  
 Malang, Indonesia  
 siti.zubaidah.fmipa@um.ac.id

3<sup>rd</sup> Herawati Susilo

*Biology Department*  
*Universitas Negeri Malang*  
 Malang, Indonesia  
 herawati.susilo.fmipa@um.ac.id

4<sup>th</sup> Mimien Henie Irawati Al Muhdhar

*Biology Department*  
*Universitas Negeri Malang*  
 Malang, Indonesia  
 mimien.henie.fmipa@um.ac.id

**Abstract**— Self-efficacy is the student's belief in the ability to perform necessary tasks or actions to achieve a particular outcome. Self-efficacy can influence students' feelings, ways of thinking, motivations, academic achievements, and social behaviors. The higher self-efficacy that students have, the higher the achievement and ability students may get. The purpose of this research was to know the self-efficacy of State Senior High School students in Bengkulu City, Indonesia toward Biology Lesson. Measurement of self-efficacy refers to 3 aspects, namely magnitude, strength, and generality. The method used was survey method. The samples of this research were 160 students of class X of academic year 2017/2018 taken from Public High School (SMAN) 1, Public High School (SMAN) 2, Public High School (SMAN) 4, Public High School (SMAN) 5 and Public High School (SMAN) 6. The results of the study showed that the average self-efficacy of students are 58.60 on magnitude aspect with the medium category, 56.85 in strength aspect with the medium category, and 48.70 in generality aspect with the low category. Based on the results of this study, it is necessary to improve the learning process especially by using models of learning that can improve students' self-efficacy in Biology Lessons.

**Keywords**— *Self Efficacy, State Senior High School Students, Bengkulu City*

## I. INTRODUCTION

The paradigm of 21<sup>st</sup>-century national education in science education, as we know, do not only makes a student knowledgeable, but also has a critical, logical, inventive and innovative attitude, and is consistent, accompanied by instilling excellent values and cultivating a commendable attitude to life in society [1]. Based on the "21st Century Partnership Learning Framework", there are aspects of behavior-based human needs of the 21st century, one of which is the self-direction that has a clear direction and principle in the effort to achieve the ideals as an individual [2].

National commitment states the need for attitude assessment that can be implemented in learning, one of them is on Biology subject [3]. As a science, Biology has

characteristics that include four elements, namely product, process, application, and attitude. Biology learning should involve students in various domains that are cognitive, psychomotor, and effective [4]. Affective aspect referred to in Biology learning is one of them is the attitude of self-confidence or self-efficacy. Affective domains determine the success of one's learning. Five characteristics affect student affective learning outcomes are attitudes, interests, self-concept, values, and moral. The concept of self is closely related to student self-efficacy [5,6].

Self-efficacy is expressed as a belief associated with one's ability to demonstrate behavior and skills in action [7-10]. Self-efficacy determines how feelings, thoughts, academic achievements and behaviors towards actions are performed. Self-efficacy is considered necessary as an internal factor that encourages students to achieve and influence students' choices in learning activities, levels of business and performance [11-13]. Students with high self-efficacy are generally assiduous and not easily give up when faced with failure or difficulty [11].

Academic success is associated with students' characteristics of students' ability to control their activities. Factors affecting this ability are self-efficacy [13-16]. Self-efficacy of students is considered a key component of success in learning and an important variable in maintaining control over one's actions [17].

The results of the study that students who have high self-efficacy have the spirit to complete any task given [18]. In addition, high self-efficacy students also dare to take risks, create difficult and energetic tasks rather than low self-efficacy students [19].

Research conducted most students do not have confidence in his ability in determining and implementing learning activities to achieve what has been previously targeted in chemistry learning [20]. This is also found in the Susanti & Aulia study (2016), students with high self-efficacy have better learning outcomes than students with low self-efficacy [21]. research that with high self-efficacy, they believe can achieve higher values in the test than

students who have low self-efficacy, and students with high self-efficacy also believe can solve the problems they face [22].

Conversely, individual success in completing the task can improve self-efficacy [7]. The level of self-efficacy that individuals have can be seen from the aspect of self-efficacy. Self-efficacy possessed by a person is different, can be seen based on aspects that have important implications for behavior. According there are three aspects of self-efficacy, namely: Magnitude, this aspect relates to the level of difficulty of individual tasks. Generality, this aspect relates to the wide range of tasks or behaviors about self-belief. Strength, this aspect relates to an existing self-belief in a person that he can achieve in achieving certain performance [7].

Someone who has high self-efficacy will have high psychological resilience, so they are very efficient in solving problems and able to apply effective strategies, finding partners learn, not easily desperate and even overcome the failures encountered [23,24]. The lower the students' self-efficacy then they are convinced that they will not be able to perform the task even before the task is given [25].

Interview with teacher of Biology of Public High School (SMAN) 1 Mrs. Sisy, Public High School (SMAN) 2 Mrs. Elta, Public High School (SMAN) 4 Mrs. Martini, Public High School (SMAN) 5 Mrs. Herlina and Public High School (SMAN) 6 Mrs. Neri that the reality in the evaluation of learning that has never done assessment of self-efficacy so that a teacher does not know the reason of a students are difficult in completing tasks or problems given. The learning system that exists in all these schools uses the method of presenting the lesson in front of the class. In Biology learning

in the classroom where many students feel anxious and afraid when the teacher is appointed to advance presenting lessons or tasks in front of the class, this is due to the lack of readiness of the students to mastery of the material being studied in the classroom.

Until this recent time, it is assumed that teachers are less focused on self-efficacy problems in the learning process. Therefore, the purpose of this research is to know the students' self-efficacy of state-owned senior high school Bengkulu on Biology Subject.

**II. METHOD**

This research is descriptive research with survey method. The sample used is the tenth grade students in general with the number of 160 students consisting of Public High School (SMAN) 1, Public High School (SMAN) 2, Public High School (SMAN) 4, Public High School (SMAN) 5 and Public High School (SMAN) 6 Bengkulu City, Indonesia. Determination of research sample is done randomly from the population as much as 10 Public High School (SMAN) and a sample were taken 5 Public High School (SMAN). The research instrument used is self-efficacy questionnaire to Biology subject, with many statement number is 54 number. The statement on the questionnaire includes aspects of magnitude, strength, and generality. Indicators in each aspect are presented in Table 1. Questionnaires are shown in the appendix.

The data of the research were analyzed using descriptive statistic, the mean value of student self-efficacy was grouped in each category in Table 2.

Table 1. Self-efficacy Aspects (Bandura, 2006)

No	Self-efficacy Aspects	Indicators
1	Magnitude Level	Task completion level Task difficulty level Optimistic in facing the task
2	Strength Level	Persistent in studying Persistent in doing the task Consistency in gaining the target
3	Generality Level	Task mastery Learning material mastery Time management method

Table 2. Self-efficacy Categorization

Category	Interval
High	>60,00
Medium	50,00-59,00
Low	<49,00

**III. RESULT AND DISCUSSION**

Description of the questionnaire results of students' Self efficacy at Public High School (SMAN) 1, Public High School (SMAN) 2, Public High School (SMAN) 4, Public High School (SMAN) 5 and Public High School (SMAN) 6 Bengkulu City, Indonesia can be seen in Table 3.

Table 3 shows the recapitulation of a self-efficacy questionnaire which consists of three aspects, namely magnitude, strength, and generality. Of the three aspects, the magnitude aspect has the highest average (58.60), then followed by the strength aspect (56.85) and the last is the aspect of generality (48.70). If observed in more detail, then

the only aspect of generality that is in the low category. The aspect of magnitude and strength is an insufficient category

Recapitulation of students' self efficacy value of Public High School (SMAN) 1, Public High School (SMAN) 2, Public High School (SMAN) 4, Public High School (SMAN) 5 and Public High School (SMAN) 6 Bengkulu on aspects of magnitude, strength and generality are presented in FIGURE 1.

Fig. 1 describes the recapitulation of self-efficacy value in each Public High School that is used as the research sample. Public High School (SMAN) 1 Bengkulu, has the highest average compared to other Public High School

(SMAN) for every aspect of self-efficacy is meticulous. Public High School (SMAN) 2, Public High School (SMAN) 4, Public High School (SMAN) 5, and Public High School (SMAN) 1 have average self-efficacy values that vary from one aspect to another. In Public High School (SMAN) 2, the highest aspect is a magnitude, while Public High School (SMAN) 4 has the highest average in strength aspect. For Public High School (SMAN) 5, occupying the highest average on the magnitude and Public High School (SMAN) 6 aspects, the average self-efficacy score is highest on the strength aspect.

Table 3. Recapitulation of Students' Self-efficacy Questionnaire of Public High School (SMAN) 1, Public High School (SMAN) 2, Public High School (SMAN) 4, Public High School (SMAN) 5 and Public High School (SMAN) 6 in Bengkulu City.

No	Self-efficacy Aspects		Schools					Mean ( $\bar{X}$ )
			SMAN 1	SMAN 2	SMAN 4	SMAN 5	SMAN 6	
1	Magnitude	Value	71.00	66.00	53.78	55.75	46.50	58.60
		Category	High	High	Medium	Medium	Low	
2	Strength	Value	80.00	50.89	60.35	43.02	50.00	56.85
		Category	High	Medium	High	Low	Medium	
3	Generality	Value	68.00	53.00	42.50	40.00	44.00	48.70
		Category	High	Medium	Low	Low	Low	

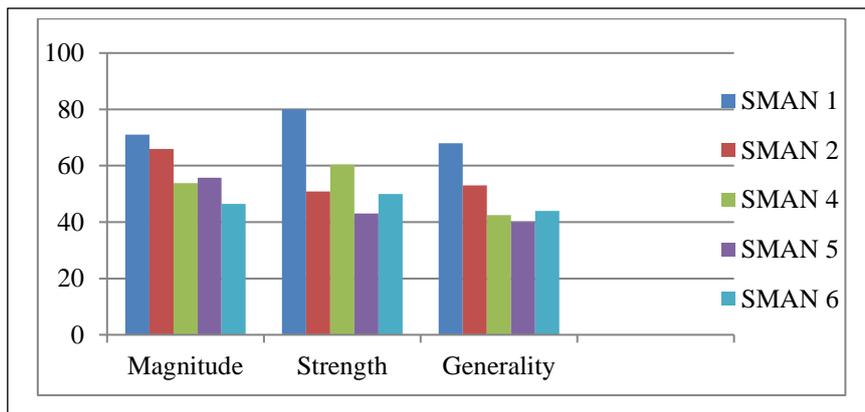


Fig. 1. Self-efficacy Value Graph viewed from Aspects of Magnitude, Strength, and Generality of Students on Biology Subject

Self-efficacy in the learning process is very important because it affects students in achieving academic achievement, behavior, way of thinking, motivation, feeling to achieve the desired result [7,11,13-15,26]. Self-efficacy emphasizes one's ability to do something, not to question the success of others [27].

Based on the results of data analysis has been obtained that on the aspect of magnitude, self-efficacy students Public High School (SMAN) 1, and Public High School (SMAN) 2 is in the high category while students of Public High School (SMAN) 4, Public High School (SMAN) 5 are in the category of moderate, this is because students feel optimistic completion Biology assigned either the task is easy or difficult. Students with high self-efficacy will have confidence in their ability to do the job. A person with high self-efficacy will feel confident in their actions, thoughts, and feelings compared to those with low self-efficacy and affect their future [28]. The same is also revealed showing evidence

that self-efficacy plays an important role in overcoming motivating students to accomplish challenging work concerning achieving a particular goal [23].

The low self-efficacy of Public High School (SMAN) 6 students on the magnitude aspect due to the lack of students' self-confidence when given the difficult task of Biology, the difficulty of the task faced by the individual will influence the individual's judgment on his ability, the more complex a task faced by the individual the lower the individual it assesses its ability. This belief is influenced by the physiological and emotional state or one's physiological and emotional state. Strong emotions usually will reduce performance, when a person experiences strong fears, acute anxiety, or high-stress levels, will likely have low self-efficacy expectations [29,30]. According to students with high self-efficacy have good learning outcomes compared to students with low self-efficacy [22]. The lower the self-efficacy they will not be able to perform the given task [25].

In the aspect of strength, the self-efficacy of students of Public High School (SMAN) 1 and Public High School (SMAN) 4 are in the high category during Public High School (SMAN) 2 and Public High School (SMAN) 6 in the medium category. This is because students have a level of strength in the learning process, completing Biology tasks as well as the strength that students feel confident to achieve desired goals. Factors that affect it include vicarious experiences (success experiences of others). Vicarious experiences are the most powerful source for creating strong self-confidence because it provides authentic evidence to students that they can succeed in tasks.<sup>31)</sup> This powerful confidence cannot be created easily; requires experience in overcoming obstacles and difficult situations through constant effort and perseverance [32].

The low self-efficacy of the students of Public High School (SMAN) 5 on the strength aspect due to the lack of persistence and consistency of the students in learning and completing the Biology assignment given, the students still doubt their own ability so as to cause the students to avoid the Biology task which he deems difficult, before trying harder to solve. It needs a social approach to students. Verbal Persuasion such as the individual gets persuasion or suggestion to believe that he can overcome the problems that will be faced. This verbal persuasion can lead individuals to try more diligently to achieve goals and success [32]. Impact of social/verbal source persuasion is quite limited and if under appropriate conditions persuasion from others can increase or decrease self-efficacy and similar experiences with others can improve self-efficacy [33].

For generality aspect, the self-efficacy of Public High School (SMAN) 1 student is in high category and Public High School (SMAN) 2 in the medium category, this is because students have felt confident with the ability to deal with problems or complete assigned Biological assignments. One of the factors that support students in this aspect is the experience of success and achievement. Enactive Attainment and Performance Accomplishment is an important source of self-efficacy expectations because of individual experience directly. Individuals who have achieved an achievement will be encouraged to increase their confidence and self-efficacy assessment. The experience of individual success will increase perseverance and persistence in trying to overcome difficulties, thus reducing failure [7,26,34].

Self-efficacy students of Public High School (SMAN) 4, Public High School (SMAN) 5 and Public High School (SMAN) 6 on aspects of generality are in a low category. Things that cause low generality aspects include (1) lack of mastery of tasks and biology learning materials provided, (2) students only learn if there is Bi Biology or exam only and (3) lack of motivation when arranging time in learning [35]. The person with low self-efficacy always considers himself incapable of handling the situation he faces and considers himself incompetent and considers failure to be the result of his disability. Self-efficacy has a proximal effect on cognition. Highly competent individuals are more likely to pursue learning mastery and challenge personal goals, spend more time and effort to make it happen and survive the task [36]. Human motivations are raised through cognition.

The belief in self-efficacy can affect motivation in some ways, that is, determining the individual's determined goals, how much effort is made, how resistant they are to their difficulties and resilience in the face of failure [17].

Educators should provide interpersonal support and provide opportunities for creating an autonomous climate for students to actualize themselves to the point of providing more energy in the learning process [37]. According to research, the success of a teacher in teaching and learning should be supported by his abilities such as sympathetic and interesting, flexible, wise and passionate attitude to teach and choose methods or teaching strategies [32,38]. The role of teachers and education personnel as a motivator is very influential in growing and improving self-efficacy so that learning achievement can be achieved optimally [39].

Implementation of self-efficacy assessment becomes important to be implemented considering self-efficacy impact on learning achievement, behavior, motivation, and way of thinking. Self-efficacy contributes significantly to learning outcomes because self-efficacy can lead, encourage a person toward behaviors including learning behaviors to achieve desired learning objectives [10,40]. Someone who has a high self-efficacy will facilitate the learning process so that the results of learning to the maximum and vice versa someone who has a low self-efficacy will inhibit the learning process so that less maximal learning outcomes.

Several studies have concluded that there is a significant relationship between self-efficacy and student achievement [16,35,41,42]. Self-efficacy can be improved through the application of various models or learning strategies, for example, several studies have concluded that learning models or strategies that improve students' self-efficacy such as model problem learning [26,36], Argument-Driven Inquiry ADI [43], Self-Regulated Learning Strategies (SRL) [44,45].

#### IV. CONCLUSION

Based on the results of research and data analysis then the conclusion in this study is the average of students' self-efficacy at state-owned senior high school Bengkulu City is 58.60 on the magnitude aspect of the medium category, 56.85 on the strength with the medium category, and 48.70 on generality aspect with the low category. Self-efficacy of students on Biology subjects still needs to be improved. The results of this study can be a guide for researchers themselves and researchers further to improve self-efficacy through improvements in the learning process, among others through the implementation of an active and constructive learning model.

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