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Analysis of Students' Self Efficacy in Science Learning

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Abstract

Distrust of students' abilities will have an impact on the process and expected results in learning. With self-efficacy in students, it will require students to behave steadily and effectively in learning. This study aims to identify students' self-efficacy in learning science. Students are expected to have self-potential and develop a level of confidence in their ability to do or achieve learning goals. The survey research was conducted on 30 students of class IX SMPN in Padang City. Data was collected using a questionnaire based on self efficacy indicators with 15 questions. The results of the analysis of the data obtained that the self-efficacy level of class IX students of SMPN in Padang City is 70.94 with a high category. This means that both teachers and students have actively worked together in the success of the science learning process in the classroom.

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INTRODUCTION

Education is one of the main ways to improve human resources which is strengthened in the UUD No. 20 of 2003 article 3 that "National education has a function to increase potential and change behavior and make a dignified nation, as a manifestation of the educational goals of the Indonesian state as stated in the opening The 1945 Constitution aims to develop student's abilities so that they become human beings who believe in God Almighty, have noble character, are healthy, knowledgeable, capable, creative, independent and become democratic and responsible citizens. The point is that the goal of national development is to educate the nation to improve human resources (Hermanto, 2020).

Education currently has an influential position in providing guarantees for students to have self-potential and develop students' self-confidence in their abilities to do or achieve goals for a job which is better known as self-efficacy. Confidence in the abilities possessed include confidence, adjustment, cognitive, intelligence, and ability to act in various situations or problems experienced. In line with what Bandura (1997) said, Self Efficacy can affect a person's behavior change.

In learning science, self-efficacy is needed by students in relation to increasing their learning achievement and the success of the science learning process. Students' efficacy in the science learning process does not only benefit themselves (self-efficacy) who believes they can solve science problems in life because they have mastered the basic concepts of science. Furthermore, students' attitudes in understanding science can be influenced through the learning process (Wardhani, 2015; Sukowati, Rusilowati and Sugianto, 2017). This is reinforced by the opinion of Haciieminoglu (2016) through his research that there is a correlation between students' attitudes towards science and has a significant influence on the success of learning objectives, self-efficacy, meaningful learning processes, and student academic achievement. positive attitudes that students have can increase the creation of meaningful learning and higher academic achievement of students. the greater the student's learning achievement, the higher the level of students' confidence in their abilities and self-efficacy will be.

A student who has a low level of Self Efficacy tends to make less effort in learning in making science assignments given by the teacher because they lack confidence in the results they get after learning with the assumption that learning can accelerate them in making science assignments (Oktariani, 2018). Self-efficacy is believed to be a major component of one's career development process. In short, this belief becomes an individual's estimate of his or her ability to perform a particular skill.

In other words, Self Efficacy is not an overall trait in a person, such as a self-esteem, but, Self Efficacy is a dynamic set of self-confidence related to certain aspects of performance and activities, therefore self-efficacy is a form of self or self. the knowledge that has an influence on students' thinking in the science learning process (Tate *et al.*, 2015). Based on these problems, this article analyzes the level of student self-efficacy in high school science learning in Padang City.

METHOD

This research is survey research. The analysis was conducted on 30 students of class IX SMPN 9 Padang City. The instrument used is a questionnaire consisting of 11 questions. The details of the questionnaire indicators are based on the self-efficacy indicators, which can be seen in table 1.

Table 1. Self Efficacy Questionnaire Grid for students

Variable	Rating Indicators	Question items
Self Efficacy	Have optimistic insight	1,2,3
		4,5,6
	Confidence in doing tasks better	7,8
		9,10
	Give the best effort	11,12,13
	Commit to doing the task	14,15
	Be positive and find ways and in various situations and conditions that occur	
	Make their previous life experiences as a guide in determining steps to achieve success.	

Bandura (1997)

To measure the level of student self-efficacy towards science learning based on the criteria for the level of student self-efficacy modified by Sadewi, Sugiharto, & Nusantoro (2012).

Table 2. Criteria for the level of student self-efficacy in science learning

Percentage interval	Criteria
81%≤X≤100%	Very high
61%≤X≤80%	High
41%≤X≤60%	High enough
21%≤X≤40%	Low
X≤20%	Very low

RESULT AND DISCUSSION

The data obtained were interpreted as categorized on a scale of 5 with details of strongly agree, agree, quite agree, disagree, and strongly disagree. The data on the level of student self-efficacy based on the indicators can be seen in Figure 1.

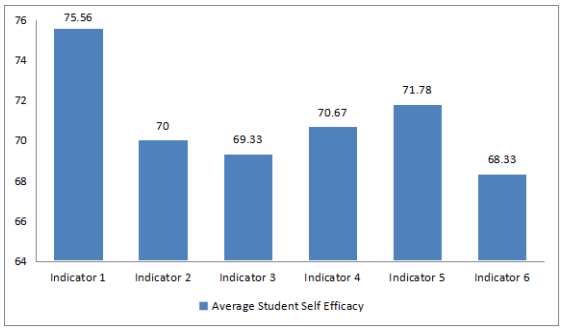

Figure 1. Student self-efficacy data in learning

Clearer data details can be seen in the recapitulation of all aspects of student self-efficacy indicators in science learning, which can be seen in table 3.

Based on table 3 and figure 1, it can be seen that the level of self-efficacy of students in science learning has an average of 70.94 in the high category. Overall, all aspects belong to the same category. This means that students' self-efficacy really supports the learning process and helps increase students' understanding in understanding the learning materials given in class.

The first indicator is optimistic. The three item statements have an optimistic outlook on indicators that are developed. Students' self-efficacy abilities on indicators of optimistic outlook can be seen in Figure 1. Based on the questionnaire distributed by researchers, data obtained 75.56 which means students have an optimistic outlook with a high category. According to (Zulyani, (2021) said that the optimistic attitude of students can make the learning process more meaningful and improve student academic achievement in various aspects of knowledge and other abilities possessed by students. With an attitude of optimism that students have made the learning process more active and learning outcomes more satisfying. Students will be able to participate in the learning process. in line with the opinion of Kurniati & Fakhruddin, (2018) that an attitude of optimism will have a positive influence and improve one's learning outcomes. The optimistic attitude of students can improve students' scientific attitude in learning science.

The second indicator is Confidence in doing tasks better. Based on Figure 1 obtained 70.0 data, which means students have confidence in doing the three tasks better in the high category. Albert Bandura (1995) argues that with self-efficacy someone will have confidence in compiling and completing the actions he takes. This can be seen from the way students solve problems in the learning process. The confidence that students have is also inseparable from the first indicator of student self-efficacy, namely student optimism which is quite high. The optimism that students have can also motivate students in the science learning process. Confidence in one's abilities is a positive attitude that becomes the biggest impetus in achieving better performance. students

Table 3. Recapitulation of All Aspects of Students' Self Efficacy in Science Learning

Self Efficacy Indicator	Percentage	Category
Have optimistic insight	75.56	High
Confidence in doing tasks better	70.00	High
Give the best effort	69.33	High
Commit to doing the task	70.67	High
Be positive and find ways and in various situations and conditions that occur	71.78	High
Make their previous life experiences as a guide in determining steps to achieve success	68.33	High
Total	425.67	
Average	70.94	High

who have a positive attitude in the learning process are more likely to be successful in understanding learning (Hidayat and Sariningsih, 2018). Successful students have their views regarding their abilities that are repeated, irreversible, sustainable, and have become a culture within them (Canfields & Watkins in Hendriana, Rohaeti, & Hidayat, 2017).

The third indicator is to increase efforts as well as possible. Based on the results obtained in indicator 3 is 69.33 which can be interpreted that students have increased their learning efforts as well as possible with a high category. It can be said that students have high motivation in solving problems they find in learning. In line with Lunenburg (2011) which states that high self-efficacy will make a person continue to strive and try to learn and complete tasks that can make them successful.

The fourth indicator is committing to doing the task. The fourth indicator obtained data of 70.67 with the interpretation that students commit to doing assignments. with a high category. Increasing student commitment in doing assignments can be a solution in overcoming students' academic problems (Hidayatullah and Zwagery, 2018). In line with the opinion of (Pradana, 2020) which says that student commitment in doing assignments is very important in the process of achieving the learning objectives to be achieved.

The fifth indicator is being positive and finding ways and in various situations and conditions that occur. The fifth indicator obtained data of 71.78 with the interpretation that students have been able to be positive and find ways and in various situations and conditions that occur in the science learning process with the High category. Students who have a positive attitude in learning can improve student academic achievement (Iberahim, Mahamod and Mohammad, 2017). A positive attitude in learning science needs to be instilled, because a positive attitude will affect optimal learning outcomes (Kurniawan, Astalini and Kurniawan, 2019). The quality of education is assessed from the affective abilities of students by having positive characters, especially strong responsibilities (Mustika Nugraheni and Sutopo, 2021).

The sixth indicator is to use their previous life experiences as a guide in determining steps to achieve success. Based on Figure 1 obtained 68.33 data which can be concluded that students have used their previous experience as a guide in determining the steps that must be taken in achieving success in realizing science learning objectives with a high category. The success achieved by students cannot be separated from the motivation and interest of students in these subjects.

Based on the data obtained, it can be concluded that the self-efficacy of students in science learning as a whole is 70.94 in the high category. High self-efficacy abilities of students will be able to improve the skills needed in the 21st century, namely communication skills (Hendriana and Kadarisma, 2019), problem-solving (Utami and Wutsqa, 2017). Reinforced by the research of Belz and Hacket in 1983. Belz and Hacket said that students who have better self-efficacy tend to be able to do their tasks better and achieve the higher success which is seen in the student's learning success. On the other hand, students who have low self-efficacy will tend to find it difficult to solve problems they find in the learning process that have an impact on their academic achievement (Pajares and Miller, 1997). Students' views on self-efficacy affect the size of the effort they will do and the time it takes students to find solutions to problems or obstacles in the learning process. The low efficacy of students in the learning process will result in students' difficulties in doing assignments and tend to ignore the task. However, if students have high efficacy, students have the enthusiasm to solve them by ignoring the obstacles they will experience.

The self-efficacy indicator that students have is having optimistic insight. students who have an optimistic attitude in themselves will have a positive impact on the cognitive development and scientific attitude of students in science learning. This attitude makes it easier for students to follow a series of learning processes in class. This is in line with the research conducted by Putri, (2021) which explains that there is a significant relationship between the optimistic scientific attitude of students and their cognitive abilities. the second indicator, Confidence in doing the task better. Self-confidence is also needed in learning because with a confident attitude students can be successful in learning. Students who have good self-confidence will be able to help these students improve their learning outcomes at school.

The second indicator, Confidence in doing the task better. Students' self-confidence can help students in the learning process (Zunika, 2022). Students will be more active in learning so that students will understand science learning concepts faster (Riska and Alexon, 2021). Science learning process is expected to run effectively and efficiently. With a high self-confidence, students are also expected to improve student achievement (Kholifah, Krissandi and Sarwi, 2021). Students

who have self-confidence are those who can work actively, do assignments well, are responsible and have systematic future plans. Self-confidence is the basis for developing self-actualization and being able to know and understand oneself.

Indicators of self-efficacy are interrelated with each other. with good self-confidence will develop the best attitude and effort in doing the task and be committed to being able to do all the tasks given to the maximum. these attitudes underlie students to give their best version of each. hope for students who have these attitudes, students will be better able to give their best learning outcomes and achievements.

The positive attitude that students have directs students to find the best solution to the learning problems they find in various situations and conditions. A positive attitude can also train students to get used to finding the best solution to the problems they face. The development of an optimistic, confident and positive attitude for students is expected to be the initial provision for student success in the learning process. The conditions and situations that occur in their lives can be used as valuable experiences to determine goals and next steps in achieving life success.

CONCLUSION

Based on the data obtained, it can be concluded that the self-efficacy of students in science learning is in the high category in all aspects of self-efficacy. This can also be seen in each student's self-efficacy indicator which is in the fairly high to high category. The increase in student self-efficacy is also influenced by the teacher's role in improving the quality of the science learning process in the classroom. Thus, students can solve problems, are active in science learning, and can collaborate well because they already have good self-efficacy. Students who have high enough self-efficacy can improve cognitive processes in making decisions and students' academic achievement. Self-efficacy possessed by students can create the character of students who prefer challenges rather than avoiding difficult problems or tasks given by the teacher in science learning.

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