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Mathematics Self-Efficacy in Senior High School Students

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Keywords

self-efficacy, mathematics,
high school students

Abstract

7 This study aims **6** determine the importance of mathematics self-efficacy in high school students. Self-efficacy is a belief related to **the ability** and ability of a student to achieve and complete study tasks with predetermined results and time targets. Self-efficacy relates to the belief that oneself has the ability to perform **the** **5** expected actions. The method and type of this research is using a literature study. **The results of this study indicate that there is an effect of students' mathematics self-efficacy on solving mathematical problems and also on mathematics achievement, including test achievement. The higher the mathematics self-efficacy that students have, the easier it is for students to solve mathematical problems or complete their assignments.**

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INTRODUCTION

Education is a process of fostering and developing a dignified human personality and national civilization in order to educate the nation's life which aims to develop the potential of students to become human beings who have noble character, are healthy and knowledgeable as well as capable and independent. Mathematics as a scientific discipline cannot be separated from the world of education, especially in the development of science and technology.

Everyone always deals with mathematics in solving problems, for example problems related to the area of an area, calculating distances, financial calculations and various other problems. Given the importance of the role of mathematics, mathematics is a compulsory subject taught at every level of education.

Permendikbud number 58 of 2016 concerning the guidelines for learning mathematics, it is stated that "mathematical learning is not only intended for mastery of mathematical material as a mere science, but also to achieve a more ideal goal, namely the assignment of mathematical skills (mathematical literacy) in solving mathematical problems needed to understand mathematics. environment and success in life.

Problem solving includes understanding the problem, designing problem solving, solving problems, checking the results back (Siswono, 2005). Therefore, problem solving is a high level of intellectual activity, and students are encouraged and given the widest opportunity to take the initiative and think systematically in dealing with a problem by applying the previously acquired knowledge.

In fact, the results of the problem-solving abilities that students face are still far from expectations. The results of the study stated that the problem solving skills of high school students or junior high school students were still low. Other research results from the Program for International Students Assessment (PISA) study released in 2019 showed that Indonesian students experienced a decline in mathematics from 386 in 2015 to 379 in 2018, and Indonesia's ranking in mathematics was 73 out of 79 countries assessed.

Also look at the results of the Computer-Based National Assessment (ANBK) in Indonesia in 2021, the results of which were released on January 19, 2022 by the Educational Assessment Center of the Educational Standards, Curriculum, and Assessment Agency (Puspendik) - Kemdikbudristek, of the 34,439 educational units in Indonesia participating in the ANBK with the number of student respondents being 1,170,637 SMA/SMK/equivalent levels throughout Indonesia, the numeracy ability of students is less than 50% who have reached the minimum competence (Puspendik-Kemdikbudristek, 2022).

Seeing the problem above, it is necessary to find the cause of the problem and the solution. There are several factors that influence students in mastering mathematical material so that students can have the ability to solve mathematical problems. In general, there are internal factors and external factors. External factors such as the way the teacher teaches, the facilities and infrastructure used by the teacher in teaching and other factors that are not from the students.

Researchers will focus on internal factors, namely cognitive, affective and psychomotor abilities, because these three aspects are interrelated. Affective ability is related to psychology. The psychological aspect is a supporting aspect that makes a person successful in completing their duties properly. Handayani (2011) which states that one of the supporters or supports for someone to succeed is from the psychological aspect that makes a person successful in completing tasks well.

Affective factors refer to various feelings or heart tendencies which generally include things that are not related to the ability to think. Affective factors are problem solving beliefs, attitudes towards mathematics, mathematics anxiety, and mathematical self-efficacy (Guyen & Cabakor, 2013). Self-efficacy is the belief that a person has in relation to his own ability to carry out activities. Self-confidence or self-efficacy in academics has been shown to have greater predictive validity than other self-perception constructs such as self-concept (Pajares & Miller, 1994) and locus of control (Smith, 1989).

Seeing the importance of self-efficacy on the results of problem solving in students. So the researchers will focus on the discussion of mathematics self-efficacy in high school students. The results of this research and discussion are expected to be able to provide information and data about the importance of mathematics self-efficacy in high school students.

13 METHODS

This research uses literature study method (literature review). This method is done by collecting library data, reading, taking notes and managing research (Zed, 2014). It can be said that this literature study is a method by doing a summary of books, documents, journals and other research results and then concluded. The type of data used by the author in this study uses data obtained from the literature study method. This research is defined as the method used to collect data or sources that have similarities with the topic in this study.

RESULTS AND DISCUSSION

Self Efficacy

Self-efficacy is a belief that students must have in order to succeed in the learning process. According to Albert Bandura (Alwisol, 2007) self-efficacy is self-perception of how well one can function in certain situations. According to Rustika (2012) self-efficacy plays an important role in everyday life. A person will use his abilities optimally if it is supported by the person's self-efficacy.

According to Bandura (Alwisol, 2014) academic self-efficacy refers to beliefs related to the ability and ability of a student to achieve and complete study tasks with predetermined results and time targets. Academic self-efficacy refers to the consideration of how much a person believes about his or her ability to carry out a number of learning activities and their ability to complete learning tasks (Yuliyani, Handayani, & Somawati, 2017).

The dimensions of self-efficacy according to Bandura (Nuryaninim, 2012) are: (1). Magnitude is related to the level of task difficulty faced by a person. A person's belief in a task varies. (2). Generality is a feeling of ability shown by individuals in different task contexts. (3). Strength is the strength of one's belief regarding the abilities possessed.

Math Self-Efficacy

There are many perceptions among students that mathematics is a difficult subject. Students with high self-efficacy will believe that they are able to do something, compared to students with low self-efficacy will consider themselves unable to do even a thing. In difficult situations, students with low self-efficacy will tend to give up easily. Meanwhile, students with high self-efficacy will try harder to get through it (Ningsih & Hayati, 2020).

Firmansyah and Fauzi (Nuryaninim, 2012) mathematical self-efficacy is defined as a situational assessment of an individual's belief in his ability to successfully form or complete certain mathematical tasks or problems. Self-efficacy helps people make choices, their efforts to move forward, the persistence and perseverance they display in the face of adversity, and the degree of anxiety or calmness they experience as they sustain the tasks that involve their lives.

There is a significant direct effect of self-efficacy on mathematics learning achievement (Widyaninggar, 2015). The results of research conducted by Somawati (2018) revealed that the results of the study showed that there was a significant influence between self-efficacy on mathematical problem solving. This means that in solving mathematical problems, the higher the self-efficacy of students, the easier it is to solve mathematical problems.

Several studies have also stated that mathematics self-efficacy has a positive correlation with student learning outcomes (Talsmaa, Schüzab, Schwarzercd, & Norrisa, 2018; Schöber, Schütte, Köller, McElvany, & Gebauer, 2018). Self-efficacy does not only affect mathematics learning outcomes, through self-efficacy also has a direct impact on mathematics achievement. These results also show that the sources of mathematics self-efficacy have an influence on mathematics lessons and exam performance (Özcan & Kültür, 2021).

This shows that mathematics self-efficacy has an influence on mathematics learning outcomes, both in problem solving and in mathematics achievement, including test achievement. The higher the

mathematics self-efficacy possessed by students, the students are not more confident in their abilities and will not easily give up in doing or solving the math problems they face.

CONCLUSION

Self-efficacy is a belief that students must have in order to succeed in the learning process. Self-efficacy relates to the belief that oneself has the ability to perform the expected actions. Mathematics self-efficacy is the belief that students have in solving mathematical problems. There is a significant influence of students' mathematics self-efficacy on learning outcomes and problem solving. Mathematics self-efficacy also does not only affect learning outcomes but also affects mathematics achievement, including test achievement. To see how the level of self-efficacy possessed by students, a self-efficacy scale is needed to measure it, a scale that is valid, reliable and practical in its use.

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