How Effective is Mathematical Self-Efficacy Influencing Interpersonal Intelligence of Elementary School Students

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Abstract: The benefits of mathematical self-efficacy as a driver of students in facing their challenges in learning mathematics, and students' interpersonal intelligence as the ability of students to interact with people around them in learning. This research was inspired to provide an understanding of the relationship between mathematical self-efficacy and students' interpersonal intelligence. The research applied the correlational method. Participants as a sample in the study were 27 first-grade elementary school students in Purwakarta. Instruments in measuring mathematical self-efficacy used questionnaires and interpersonal intelligence was measured by observation. The findings of this research inform us that there is no significant relationship between students' mathematical self-efficacy and the interpersonal intelligence of elementary school students. Furthermore, mathematical self-efficacy had a very limited influence on students' interpersonal intelligence. Thus, an increase or decrease in mathematical self-efficacy cannot be guaranteed to also occur in the interpersonal intelligence of elementary school students.

Keywords: mathematical self-efficacy, interpersonal intelligence, correlation, elementary school.

INTRODUCTION

Education plays an important role in the progress of a nation. Education is carried out with conscious planning to accommodate students to develop intellectually and emotionally, so that they can become a quality generation that is beneficial to themselves, their families, communities, and also the nature of their place of residence (Basit & Maryani, 2020). To support the educational process so that it runs well, student self-efficacy is needed which functions to provide self-confidence to students so that they can confidently accept learning through education. Self-efficacy is people's beliefs about their ability to produce designated performance levels that affect their daily activity (Muqodas, Putri, Yuliyanto, & Agustin, 2020). Self-efficacy is a part of the affective aspects that significantly influence learning (Yuliyanto & Turmudi, 2020). Based on learning in mathematics, mathematical self-efficacy was a student's sense of confidence in their capacity to solve the mathematical problems they received.

Mathematical Self-Efficacy is defined as a situational assessment of an individual's belief in his or her ability to successfully form or complete mathematical tasks or problems (Ningsih & Alimansur, 2019). Mathematical self-efficacy helps students encourage their desire to work on a given mathematical problem to the fullest. In line with this description, mathematical self-efficacy is assessed as a person's belief in their ability to carry out a given mathematical task (Bagaka's, 2011).

Some of the factors that influence students' mathematical self-efficacy include first, the experience of mastery, overcoming obstacles through persistent efforts, and learning how to manage failure. Second, social experience, seeing others increase self-confidence, believe in yourself, and improve yourself. Third, verbal persuasion has a limited impact on student self-efficacy because the results are explained, not witnessed directly, and thus depend on the credibility of the persuader. Finally, students base their self-efficacy assessment on the physiological

reactions they feel, such as fatigue, stress, and other emotions that are often interpreted as indicators of physical disability (Yuliyanto, Turmudi, Agustin, Putri, & Muqodas, 2019).

The description of the mathematical self-efficacy factors showed that one of the factors that influence mathematical self-efficacy was a social experience, by looking at the ability of other people to confidently complete their tasks, indicating that they will complete their tasks. In addition, humans must be equipped with the ability to think logically, analytically, systematically, critically, and creatively, as well as the ability to work together (Fitriyani & Supriatna, 2019). The ability to work together will be good if students can interact with other people around them.

The social experience was closely related to its ability to relate to and interact with other people or groups. This ability will be useful if students have good interpersonal intelligence. Previous studies described the learning process in groups to train students' interpersonal intelligence (Muqodas, Abdullah, Yuliyanto, & Putri, 2020). Learning as part of the education process. One of the functions of education was to develop students' potential intelligence. There are many kinds of student intelligence. Based on research, nine bits of intelligence have been found which is called multiple intelligence (Yuliyanto, Amalia, & Muqodas, 2020). Multiple intelligence is a set of abilities to process particular types of information derived from human biological and psychological factors (Muqodas, Putri, et al., 2020). Interpersonal intelligence was part of multiple intelligences. Interpersonal intelligence was defined as the capacity to manifest the feelings, motivation, attitudes, or desires of others as well as the skills to act effectively towards other individuals (Shaari, Effendi, & Matore, 2019). The interpersonal intelligence possessed by students could be observed from their social interactions with other people in their social environment. The social interactions that exist in students with high levels of interpersonal intelligence will further increase the quality and quantity of interactions between children and other people (Kusumaningrum, 2019). Thus, interpersonal intelligence was considered to influence students' social experiences by interacting with others. The development of students' interpersonal intelligence will be in line with the development of students' social experiences; thus, the students' mathematical self-efficacy will also develop.

Self-efficacy was important in assisting someone in the group in striving for better development outcomes and well-being (Cepukiene, Pakrosnis, & Ulinskaite, 2018). Students are also asked to socialize during learning. This interpersonal intelligence depends on individual interaction patterns; if someone had good interaction patterns, interpersonal intelligence will be easier to develop (Evasari, Maulidia, & Chaerunnisa, 2017). Therefore, if mathematical self-efficacy or student interpersonal intelligence was developed, it will help students face the tasks they received.

Therefore, this study discusses the correlation between mathematical self-efficacy and the interpersonal intelligence of elementary school students. And testing the related problem whether there is a relationship between mathematical self-efficacy and interpersonal intelligence of elementary school students.

METHOD
The method in this research uses the correlational method. This study serves to see the relationship between mathematical self-efficacy and interpersonal intelligence of elementary school students. The population in this study were all students in Purwakarta Regency. The technique of determining the sample with purposive sampling. As a sample involved in this study consisted of 27 first-grade students in an elementary school in Purwakarta. The instrument for measuring mathematical self-efficacy was using a questionnaire, while the observation sheet was used to measure interpersonal intelligence. Data analysis using correlation test with the help of SPSS software version 25 for macOS. The determination of the correlation criteria uses the R-value which is

classified based on the Guilford correlation coefficient (Putri, Wahyudy, Yuliyanto, & Nuraeni, 2020) which was contained in table 1 below:

Table 1. Guilford Correlation Coefficient

r_{xy} value	Interpret
$0{,}90 < r_{xy} \leq 1{,}00$	Very high
$0{,}70 < r_{xy} \leq 0{,}90$	High
$0{,}40 < r_{xy} \leq 0{,}70$	Moderate
$0{,}20 < r_{xy} \leq 0{,}40$	Low
$0{,}00 < r_{xy} \leq 0{,}20$	Very low
$r_{xy} \leq 0{,}00$	Not valid

RESULTS AND DISCUSSION

A prerequisite for doing a data correlation test is to test whether the data comes from a normal distribution. Table 2 below presents the results of the analysis of normality tests of students' mathematical self-efficacy and interpersonal intelligence.

Table 2. Normality Test data for MSE and Interpersonal Intelligence

Variables	Kolmogorov-Smirnov		
	Statistic	df	Sig.
MSE_X	0,278	27	.000
INTER_Y	0,195	27	.010

Table 2 informs that the two data did not come from normally distributed data with sig <0.05. Because the two data came from data that were not normally distributed, to see the relationship between the two variables used non-parametric with the Spearman Rank Test. The summary of the Spearman Rank correlation test can be seen in Table 3 below:

Table 3. Recapitulation of Spearman rank self-efficacy test with Interpersonal Intelligence

Spearman Rank Test	r	r square	p-value	Criteria
MSE (X) and INTER (Y)	0,034	0,001	0,936	H_o Accepted

Based on Table 3, it explains that mathematical self-efficacy and interpersonal intelligence have a p-value greater than 0.05 so that Ho is accepted, meaning that there is no significant correlation between mathematical self-efficacy and interpersonal intelligence of elementary students. The coefficient of r value is a view of the level of the relationship between self-efficacy and interpersonal intelligence is very low when viewed based on the Guilford correlation classification. This hypothesis test found a coefficient of determination (r^2) of 0.001 which can be explained that 0.1% of interpersonal intelligence is influenced by mathematical self-efficacy. The variance in interpersonal intelligence (Y) is explained by mathematical self-efficacy (X) through a linear line $Ŷ$ = 75.046-0.079X. The description means that mathematical self-efficacy hurts interpersonal intelligence. So that each mathematical self-efficacy scale decreases by 10, then interpersonal intelligence decreases by 0.079.

Based on the findings obtained, it shows that there is no significant relationship between mathematical self-efficacy and interpersonal intelligence of elementary school students. The meaning of these findings is that if the students 'mathematical self-efficacy is high it cannot be ascertained that the students' interpersonal intelligence will be high and vice versa. This is due to the mathematical self-efficacy factor, not only social experience which has a close meaning with interpersonal intelligence. The study says that other factors of mathematical self-efficacy consist of four levels, namely performance experience, representative experience, persuasion, and psychological status (Warwick, 2007). So that, interpersonal intelligence is not the only factor that is considered to influence mathematical self-efficacy as well as social or representative experiences. Previous research reveals that self-efficacy was greatly influenced by personal experiences that had been passed through in the real form of success and failure (Wibowo, Probowati, Muhith, Savitri, & Khamidah, 2019). Besides, self-efficacy affects learning outcomes that run through the process of learning interaction activities between students even though they are still in the low to moderate category (Yuliyanto, Turmudi, Agustin, Muqodas, & Putri, 2020). The affirmation was told of a study where there is no relationship between interpersonal intelligence and parenting, communication, sincerity, learning at home, decision making, community involvement, and parental involvement. (Monica & Scholar, 2016). Communication activities, learning experiences, and the influence of others are part of the self-efficacy factor. Several studies said there was no significant relationship between self-esteem and the level of loneliness tendency (Azizah & Rahayu, 2016). Self-esteem has similar characteristics with mathematical self-efficacy, so also loneliness indicates limited interpersonal intelligence. It was also found that there was no correlation between self-efficacy and social comparisons (Vrugt & Koenis, 2002). Social comparison theory sees the process of social influence and some competitive behavior as coming from the need to evaluate self and the importance of this evaluation based on comparisons with others (Fakhri, 2017). Thus, it is clear that interpersonal intelligence has no relationship and influence each other with mathematical self-efficacy if it is reviewed based on the findings of this study and previous research.

CONCLUSION

Based on the findings obtained, it can be concluded that there is no correlation between self-efficacy and interpersonal intelligence of elementary school students. The correlation between the two variables is based on the r-value which is classified on the low Guilford correlation coefficient. Mathematical self-efficacy had a very limited effect on students' interpersonal intelligence. Thus, other factors influence and are related to mathematical self-efficacy and interpersonal intelligence that teachers should pay attention to and review further to develop students' mathematical self-efficacy and interpersonal intelligence.

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