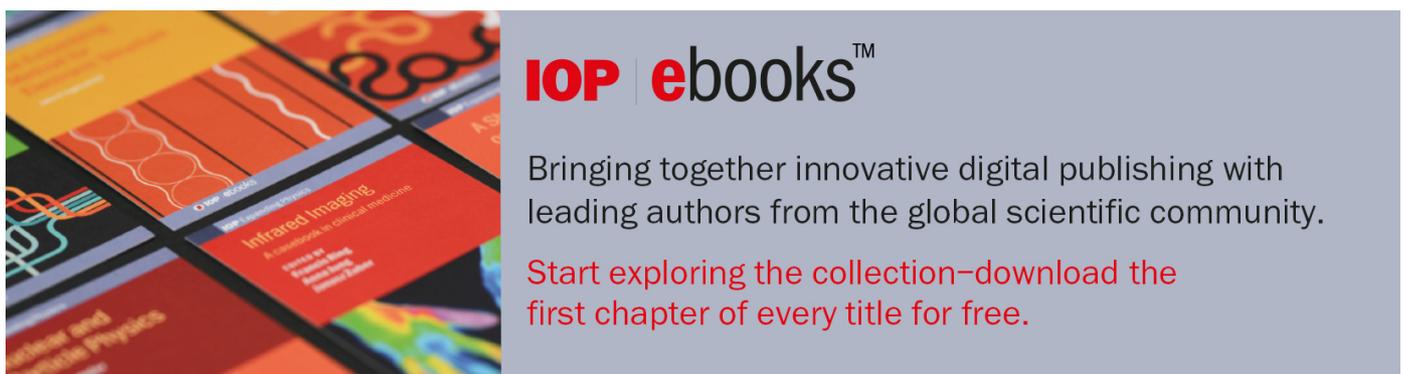


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To cite this article: U Farihah and P Rakasiwi 2020 *J. Phys.: Conf. Ser.* **1563** 012069

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# The effect of self efficacy on students' motivation and learning outcome of class 8 in build flat side space material

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**Abstract.** The purpose of this study was to determine the effect of self efficacy on student's motivation and learning outcomes in the topic of build flat side space. This study was conducted at class 8 of SMP Negeri 12 Jember east Java, Indonesia in the 2019-2020 academic year. This research used a quantitative approach in the type of survey research. Simple random sampling was used as the sampling technique. Data collection technique used were questionnaires and tests. Simple linear regression test was used to analyse the data. The research finding showed that there is an influence of self efficacy on student learning motivation (sig 0.000) but there is no influence on student learning outcomes (sig 0.062). The influence of self efficacy on learning motivation is 49.7%, while 50.3% is influenced by other factors not discussed in this study

## 1. Introduction

Mathematical learning is the process of gaining knowledge that is built by students themselves and must be done in such a way that can provide opportunities for students to rediscover mathematical concepts [1]. According to NCTM, to achieve meaningful understanding, mathematics learning must be directed at developing mathematical connection capabilities between various ideas. It is about understanding of how mathematical ideas are interrelated to one another so that a comprehensive understanding is built up, and using mathematics outside mathematics contexts [2].

Learning outcomes are an achievement or a depiction of the level of mastery after the learning process. Learning outcomes are often a benchmark for achievement or achievement of the learning effort [3]. Learning outcomes can be a tool to motivate students to learn continuously. There are two factors that affect learning outcomes; namely internal factors and external factors. Internal factors are factors that exist in each of these individuals. External factors are external factors within the individual such as environmental and social factors [4].

One of the internal factors is self-efficacy. According to Bandura, self-efficacy means trust from the extent to which individuals estimate their ability to carry out the tasks or actions needed to achieve them [5,6]. The successes and failures experienced by students can be seen as a learning experience. This learning experience will produce self-efficacy in solving problems, so that the learning ability



will increase, because of that positive self-efficacy is needed in learning so that students can achieve learning goals and achieve maximum learning achievement [7].

Self-efficacy is an element of personality that develops through individual observations of the effects of his actions in certain situations. A person's perception of himself is shaped throughout his life through rewards and punishments from those around him. The reinforcing element (reward and punishment) is lived up to in the long run to form understanding and confidence about one's abilities [8].

Factors that influence self-efficacy according to Bandura are 1) The experience of someone's success in facing a task at a previous time, 2) The experience of another person, 3) Verbal persuasion, information about a person's ability verbally delivered by an influential person so as to increase confidence individual self that he is able and can solve a problem in order to achieve the desired goal, 4) physiological conditions which involve such as fear, anxiety, stress, pain, mood, emotions. Conditions like this can affect self-efficacy [5,9].

Learning motivation can be interpreted as a driver to carry out certain learning activities that originate from within and also from outside the individual so as to foster enthusiasm for learning [6]. Students who have learning motivation will be serious and interested in learning so they get satisfying learning outcomes, while students who do not have learning motivation will tend to feel bored and fed up in learning and consequently find it difficult to get good learning outcomes. Factors that influence external and internal learning motivation include the following: 1) Nature, habits, intelligence, 2) Physical and physiological conditions, 3) Teacher, 4) Learning environment, 5) Infrastructure facilities, and 6) Parents [10].

Several previous studies have shown that self-efficacy influences learning motivation and learning outcomes. The results of the study by Sufirmansyah on Department of Islamic Education in STAIN Kediri Postgraduate students showed that student motivation was also influenced by his efficacy. The magnitude of the effect is in accordance with the existing beta coefficient, that is equal to 0.502 and significant at 0.000 (smaller 0.005). This means that self-efficacy affects motivation by 50.2%, and the remaining 49.8% is influenced by other factors [11]. While the results of Yusita Nurfitriyani's research at State Junior High School of 1 Bandung showed that there was a significant effect of self-efficacy on learning outcomes. 41.9% of student learning outcomes are influenced by self-efficacy while 58.1% are influenced by other factors [12].

Based on the description above, the purpose of this study is to determine the effect of self-efficacy on the motivation and learning outcomes of 8th grade students on the material on flat side spaces in SMP Negeri 12 Jember, East Java Indonesia.

## 2. Method

This study used a quantitative research approach to the type of survey. Quantitative approach can be interpreted as a research approach based on the philosophy of positivism. It is used to examine a particular population or sample, data collection using research instruments, quantitative or statistical data analysis, with the aim to test a predetermined hypothesis [13]. Survey research is research conducted on large or small populations. However, the data studied are sample data taken from these populations. So that, relative events, distribution, and relations between sociological or psychological variables were found. Thus, in the type of survey research researchers observe the characteristics or causal relationships between variables without the intervention of researchers [14].

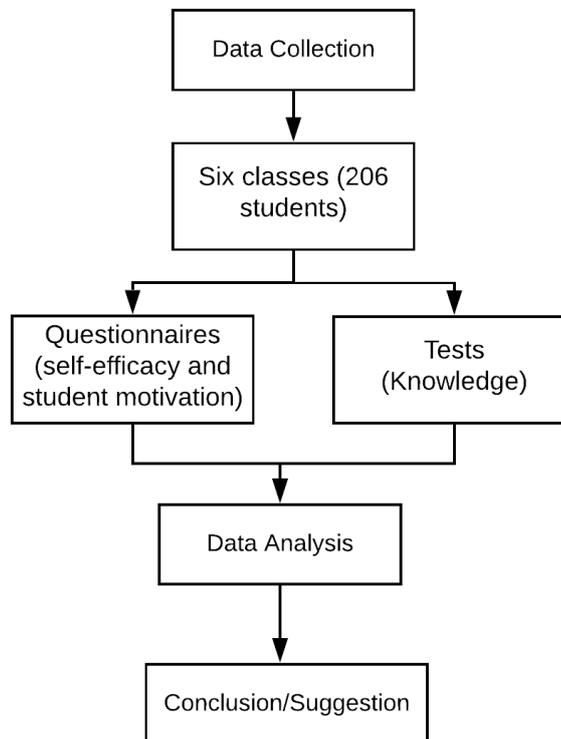
The population in this study were 8th grade students. It consisted of six classes totaling 206 students at State Junior High School of 12 Jember, East Java, Indonesia. The number of samples taken in this study uses the Slovin formula with a significance level of 5% [13]. From the calculation with the Slovin formula, the number of samples obtained was 135,957 and rounded to 136. The sampling

technique in this study uses simple random sampling, which is a sample that is calculated based on comparison [15].

Data collection techniques were in the form of questionnaires and tests. Questionnaire is a data collection technique that is done by giving a set of questions or written statements to respondents to answer [13]. The questionnaire was used to measure self-efficacy and student motivation. The test is defined as a tool and has a systematic procedure used to measure and assess a knowledge or mastery of a measuring object against a certain set of content and material [16]. The test in this study was used to measure the ability of students on the material of flat side geometry. Research data that have been obtained are then analyzed using simple linear regression to determine the effect of self-efficacy on student motivation and learning outcomes [17]. Before a simple regression analysis is performed, it is necessary to do a pre-requisite test, namely normality test, multicollinearity test, auto correlation test, and heteroscedasticity test. [18]

The self-efficacy questionnaire was 32 statements and the learning motivation questionnaire was 34 statements. The 20-item test questions are in the form of multiple choice with indicators in accordance with basic competencies and have been validated by two Mathematics lecturers at State Islamic Institute of Jember, Indonesia and one mathematics teacher at the school used as a research site. The self-efficacy questionnaire, learning motivation and the material test were tested first on 30 people in addition to the sample aimed at measuring the level of validity and reliability of the instrument. All items both in the form of test questions and self-efficacy questionnaires and learning motivation are valid and reliable. The self-efficacy questionnaire reliability coefficient was 0.921, the learning motivation questionnaire reliability coefficient was 0.919 and the test reliability coefficient was 0.834.

Test questions in the analysis also use discrimination power technique and analyze the difficulty level of the questions. The discrimination power technique is the ability of a question to distinguish between students who answer right with high ability and students who answer wrong of low ability [3,4]. Based on the criteria for the distinction index of questions for the material test to build a flat sided space obtained four questions with bad criteria, eight questions with sufficient criteria and eight questions with good criteria. While the difficulty level analysis of items is to examine the test questions given in terms of difficulty [3]. Based on the criteria for the difficulty index, out of 20 questions on the material to flat side geometry, five easy questions were obtained, 10 were medium questions and five were difficult questions.



**Figure 1.** Research Method Diagram

This research was conducted through three stages, namely the preparation phase, the implementation phase and the data analysis stage. In the preparation stage, researchers 1) make observations, 2) prepare research instruments in the form of questionnaires and tests consisting of questionnaires, questionnaires, test grids, test questions, scoring guidelines and answer keys, 3) conduct validations research instruments, 4) conduct research instrument trials, 5) analyze the results of trial instruments, 6) revise research instruments based on trial results. The implementation stage, among others: provides a self-efficacy questionnaire, learning motivation and tests. The analysis phase of the researchers analyzed the effect of students' self-efficacy on learning motivation and student learning outcomes using simple linear regression analysis.

### 3. Research Result

The results of this research were self efficacy questionnaire data and student learning motivation and test scores. First, the data were analyzed by using descriptive analysis to find a picture of self efficacy, learning motivation and student learning outcomes calculated using the percentage formula. Second, the data were analyzed by using inferential analysis that is simple linear regression to determine the effect of self efficacy on student motivation and learning outcomes.

#### 3.1. Self Efficacy Questionnaire Results

The self-efficacy questionnaire was given after students took the test. The self-efficacy questionnaire was given to find out the picture of students' self-efficacy in learning the material of flat side spaces. Based on the results of the study, it was found that 0.74% of students had very high self-efficacy, 44,

85% of students had high self-efficacy, 47.06% of students had moderate self-efficacy, 6.62% of students had low self-efficacy, and 0.74% of students have very low self-efficacy as shown in table 1 below.

**Table 1.** Data of Students Self Efficacy

Category	Amount	Percentage
Very High	1	0.74%
High	61	44.85%
Moderate	64	47.06%
Low	9	6.62%
Very Low	1	0.74%

### 3.2. Results of Student Learning Motivation Questionnaire

Student motivation questionnaire was given after students took the test. Student motivation questionnaire was given to find out student motivation in learning material to build a flat side space.

**Table 2.** Data of Student Learning Motivation

Category	Amount	Percentage
Very High	7	5.15%
High	77	56.62%
Moderate	50	36.76%
Low	2	1.47%
Very Low	0	0%

Based on Table 2 above, it can be seen that 5.15% of students have very high learning motivation, 56.62% of students have high learning motivation, 36.76% of students have moderate learning motivation, and 1.47% of students have low learning motivation.

### 3.3. Students Learning Outcomes Result

The results showed that 42.65% of the students' learning outcomes were in the very high category, 27.21% of the students were in the high category, 23.53% of the students were in the medium category, and 6.62% of the students were in the low category. Learning outcomes obtained by students can be seen in the following table 3.

**Table 3.** Data of Students Learning Outcomes

Category	Amount	Percentage
Very High	58	42.65%
High	37	27.21%
Moderate	32	23.53%
Low	9	6.62%
Very Low	0	0%

### 3.4. Effect of Self Efficacy on Student Learning Motivation

Simple linear regression analysis is used to find out the significant effect of self-efficacy on learning motivation. Before a simple regression analysis was conducted, the researchers conducted prerequisite tests namely normality, multi-collinearity, auto correlation, and heteroscedasticity. The results are all the prerequisite tests have been fulfilled. Then the hypothesis test is conducted, the conclusion of the research is significant if  $t\text{-count} > t\text{-table}$  at a significance level of 0.05 then  $H_a$  is accepted and  $H_0$  is rejected but if  $t\text{-count} \leq t\text{-table}$  then  $H_0$  is accepted and  $H_a$  is rejected. The recapitulation of the results of simple self-efficacy linear regression on student learning motivation can be seen in table 4 below.

**Table 4.** Recapitulation of Simple Linear Regression of self-efficacy to Learning Motivation

Independent Variable	Dependent Variable	Constant (a)	Regression Coefficient b	$t_{count}$	$t_{table}$	Probability	Decision
Self-Efficacy	Learning motivation	34.873	0.689	11.502	1.977	0.000	$H_a$ accepted

$$F_{count} = 132,303$$

$$R^2 = 0,497$$

$$\alpha = 0,05$$

From the above table, it can be seen that  $t\text{-count} = 11.502 > t\text{-table} = 1.977$  with  $p = 0.000 < 0.05$  then  $H_a$  is accepted and  $H_0$  is rejected. So it can be concluded that there is a significant effect of self-efficacy on students' motivation in grade 8 at State Junior High School of 12 Jember, East Java, Indonesia. Estimation results from the effect of self-efficacy variables can be expressed as  $Y = a + bX$  so that Y is obtained  $34.873 + 0.689X$

From the equation above, it can be seen that the constant value of the learning motivation variable is 34.873. Regression coefficient X of 0.689 which means that every 1% increase in the value of self efficacy, the value of learning motivation increases by 0.689. The regression coefficient is

positive, so it can be concluded that the direction of the effect of the self-efficacy variable on learning motivation is positive. As for the partial determination coefficient ( $R^2$ ) the self-efficacy variable is 0.497 or 49.7%. This shows that 49.7% of learning motivation is influenced by self-efficacy, while 50.3% is influenced by other factors not discussed in this study.

### 3.5. Effect of Self Efficacy on Student Learning Outcomes

The recapitulation of the results of simple self-efficacy linear regression on student learning outcomes can be seen in table 5 below.

**Table 5.** Recapitulation of the Self Efficacy Simple Linear Regression Results for Learning Outcomes

Independent Variable	Dependent Variable	Constant (a)	Regression Coefficient b	$t_{count}$	$t_{table}$	Probability	Decision
Self-Efficacy	Learning Outcomes	53.351	0.286	1.886	1.977	0.062	$H_0$ accepted
$F_{count} = 3.556$							
$R^2 = 0.026$							
$\alpha = 0.05$							

Based on Table 5 above it can be seen that  $t\text{-count} = 1.886 < t\text{-table} = 1.977$  with  $p = 0.062 > 0.05$  then  $H_0$  is accepted and  $H_a$  is rejected. So it can be concluded that there is no significant effect of self efficacy on the learning outcomes of 8th grade students of State Junior High School of 12 Jember East Java, Indonesia.

## 4. Discussion

Based on the analysis of the data it is concluded that self-efficacy influences the motivation to learn of 8th grade students at Junior High School of 12 Jember East Java, Indonesia. The results of this study support Selly Ernawati's previous research which stated that there was a significant effect between self-efficacy on students' motivation in class XI Madrasah Aliyah Matholiul Anwar Lamongan East Java, Indonesia. This shows that if students' self-efficacy is high, students' learning motivation is also high. Vice versa, if students' self-efficacy is low, student motivation is also low [19].

According to Pervin & John, someone who has high self-efficacy will have higher learning motivation, the higher the person's self-efficacy, the higher the motivation to learn [20]. High self-efficacy is very important students have in learning. Because students who have high self-efficacy will always have high learning motivation so that the desired goals in learning are achieved. With the confidence of the students will always try when faced with difficulties or failures. Judging from the beliefs of students who are so strong motivating themselves, then indirectly arises the motivation in him so motivated to learn.

Students who have high self-efficacy will try more, try hard and be able to improve their performance in learning, especially learning tasks faced by difficult and challenging. Everything that is done to motivate him and prevent various obstacles that may arise in order to cause motivation to learn. One example, when a student experiences obstacles or difficulties working on mathematical assignments, the student is always confident in his abilities that he can solve all problems well and try to throw away ideas if he is unable to work on the problem.

This study also concludes that self-efficacy did not affect student learning outcomes, these results support research conducted by Asril which found that self-efficacy did not significantly influence learning achievement with a contribution of only 0.6% [21]. The results of this study are also in line with research conducted by Fida Laila Rahmayanti who found that self-efficacy did not significantly

influence the learning outcomes of Islamic Education subjects in class X students at Vocational School of PGRI 2 Ponorogo East Java, Indonesia [22]. However, the results of this study do not support research conducted by Nirwana Gita Pertiwi which shows the results of 29.6% of student learning outcomes are influenced by self-efficacy [23]

This is not in accordance with Bandura 1997 which states that individuals who have strong self-efficacy consider the problem as a challenge that must be faced rather than the danger that must be avoided, and have a great interest in the activity, increase the effort done to face a failure, and connect failure as a lack of effort done or not enough knowledge and skills needed to carry out an activity [21]. This also reinforces Schunk and Santrock who stated that students with low levels of self-efficacy will avoid many tasks especially those that are challenging and difficult, while students who have high levels of self-efficacy will diligently try to master the learning task [24]. Because according to Bandura self-efficacy is not related to the skills they have, but it is related to the individual's beliefs about what can be done with the skills he has no matter how big [8].

From the description above it can be concluded that self-efficacy is not the only determinant of action. Self-efficacy is a self-assessment of how individuals can deal with all tasks faced. Self-efficacy in general is also related to self-esteem because both are aspects of self-assessment related to the success or failure of a person as a human being [8].

Self-esteem is a self-assessment done by someone against him based on his relationship with others. Self-esteem is the result of assessment and treatment of others against him and shows the extent to which individuals have self-confidence and are able to succeed and be useful [8]. For example, students who have low general self-efficacy, he will consider himself unable to be in many situations or subject assignments, but he has high self-esteem because he believes that he has a core value on subjects that he masters, and vice versa. Therefore, it is not a guarantee that students who like a certain subject will achieve high learning outcomes or vice versa, students who like these subjects will get low learning outcomes.

Student learning outcomes in this study are mostly included in the very high category, while students' self-efficacy is in the medium and high categories so it can be concluded that student learning outcomes are the same even though they have different levels of self efficacy. There are students who have low self-efficacy but have high learning outcomes, and vice versa. This shows that self-efficacy is not the only factor influencing learning outcomes. In this study shows that self-efficacy does not contribute to the influence on student learning outcomes because it may be other factors that are more powerful that affect student learning outcomes such as the family environment, school, motivation, habits, adjustment and others.

## 5. Conclusion and Suggestion

Based on the formulation of the problem and the research hypothesis proposed, as well as the results of research based on data analysis and hypothesis testing, it can be concluded that self-efficacy affected learning motivation but did not affect the learning outcomes of 8th grade students on the material of flat side geometry in State Junior High School of 12 Jember, East Java, Indonesia. The influence of self efficacy on learning motivation is 49.7%, while 50.3% is influenced by other factors not discussed in this study.

This research is only limited to the material of flat side geometry and the independent variable used is only one, namely self-efficacy, so for future research it is recommended to use more than two independent variables in order to know other factors that influence motivation and learning outcomes, but also Future researchers can choose different material and research objects for example for high school or vocational high school students.

### Acknowledgement

We gratefully acknowledge the support from the Department of Mathematics Education, Education and Teacher Training Faculty, State Islamic Institute of Jember, Indonesia

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