

ELEMENTARY PRE-SERVICE MATHEMATICS TEACHER SELF EFFICACY BELIEVE

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Abstract. This study aims to know how much the level of self-efficacy, analyze each indicator of self-efficacy, analyze each statement of self-efficacy, and determine alternatives to increase mathematical self-efficacy in the final grade Elementary Pre-service Teacher. The method in this study is a qualitative research method in the form of analysis descriptively by using a self-efficacy questionnaire. The data obtained is the mathematical self-efficacy scale of elementary pre-service teachers. Population in this research is all final year student (class of 2013) at elementary pre-service teachers of Pasundan University. The sample of the research is taken by purposive sampling, which are 149 students from all population. The results obtained from the self-efficacy questionnaire analysis that the average student has a moderate self-efficacy level. The best indicator high self-efficacy of it an indicator to 6 (I-6), this means that a student is good enough to use previous experience as a measure of success. Other than that, One statement of the highest averages were students joined in the group work when getting the task group. So, a graduate student is able to interpret that previous experience and group work will bring confidence to the success in learning.

Keywords: self-efficacy, mathematics, elementary pre-service teacher.

I. INTRODUCTION

Every individual has their own way to achieve maximum learning outcomes, including having confidence in her/his ability to perform a task or action required to achieve the learning outcomes. Individual's belief regarding the competence him to succeed in doing his work was interpreted as self-efficacy (Dzulfikar, 2013). According to Bandura (2008), self-efficacy is a person's beliefs about their capabilities to influence the expected results. In this case, the expected results in the form of teaching-learning outcomes. Teaching is a process of making learning happen in a person. Therefore, an important component in teaching that contributes to a person's learning outcomes is self-efficacy (confidence).

Self-efficacy is important for everyone, including students. The student is the successor of a nation and as an agent of change. Students

must have self-efficacy a good order to achieve satisfactory academic results. One of the compulsory subjects that students study Pendidikan Guru Sekolah Dasar (PGSD) is the subject of mathematics in PGSD which consists of subjects: basic concepts of elementary mathematics, mathematics instructional materials and media in elementary school: low-grade math, and high-grade math. Self-efficacy related to the subject of mathematics called mathematical self-efficacy. Mathematical self-efficacy is an important component in learning mathematics that must be developed. In accordance with the opinion of Unlu & Ertekin (2013) that affective domain influence mathematics learning and teaching such as cognitive domain. One of the most important affective factors is self-efficacy.

There are four sources of information self-efficacy by Bandura (in Setiadi, 2010; and



Somakin 2010) that contribute to the construction of self-efficacy, the experience complete (*mastery experience*), the experience of others (*vicarious experience*), social approach or verbal (*verbal persuasion*), and psychological and affective status (*psychological and affective states*). Additionally, Bandura (in Hendriana, 2017) states that the degree of self-efficacy refers to the three following dimensions:

1. *Magnitude/level* dimensions, namely how students can overcome learning difficulties, such as the view is optimistic in doing the task or job, how much interest in the subject or tasks, developability and achievement, saw a difficult task as a challenge, learning according to the schedule that has been set up, and be selective in achieving its objectives;
2. *Strength* dimensions, the confidence level of students in overcoming learning difficulties, such as trying to improve the performance, commitment to carry out the task or job, believe and realize the advantages, persistence in completing tasks, have a positive goal, and doing things, and motivated either to yourself to develop itself;
3. *Generality* dimensions, namely confidence in the ability of self that takes place in a specific domain or applicable in a wide variety of activities and situations, such a respond different good situations, making the experience of the past as a way to achieve success, find and like new situations, able to cope with all situations effectively, and try a new challenge.

The third dimension shows that self-efficacy impact on matters as diverse as the impact on the planning of actions to be carried out, the amount of effort, endurance in facing

adversity, resilience to failure, thought patterns, stress and depression, and the level of achievement realized (Hendriana, 2017). Therefore, from the achievements of someone we can see how much the level of self-efficacy that he had, including self-efficacy mathematically.

The relationship of self-efficacy in mathematics learning by Somakin (2010) that a person who has self-efficacy, high certainly has high self-confidence and know him well. Students who have high self-confidence, then how to solve a given problem is not enough that only one way, but worth trying in various ways. Of course, that a person who has self-efficacy high that he would not stop learning, even though she had graduated. Akay (2010) states that self-efficacy has been found as strongly predictive of performance math. In other words, the majority of studies suggest that there is a positive correlation between attitudes towards mathematics and successful.

However, from the observation by researchers to PGSD students learn math that gets great results do not always seem to have a good self-efficacy. Therefore, the authors wanted to know how much the level of self-efficacy PGSD students towards mathematics courses PGSD, analyze each indicator of self-efficacy, analyze each statement of self-efficacy, and determine alternatives to increase mathematical self-efficacy PGSD students.

II. METHODS

Based on the problems and objectives that have been formulated, then the method in this study is a qualitative research method in the form of analysis descriptively by using a questionnaire adopted instruments of Bandura (2008). The subject of this study of 149 college students, taken from the final level Study Program of Elementary School Teacher. In this study, a questionnaire was made is questionnaire self-efficacy consisting of 6 indicators and 20 items made a statement that must be answered respondents with a scale from 0 to 100. The questionnaire was distributed to as many as 149



final year students (class of 2013). Data from the questionnaire are then tabulated and analyzed to look for the average scores of each statement, the average scores for each indicator, and overall average.

III. RESULTS

The result of questionnaire mathematical self-efficacy analysis of the final level of PGSD shows the average score for 20 items of a statement from the questionnaire is 71,38 and standard deviation 9,954. The minimum score is 0 and the maximum score is 100, so the average 71.38 belongs to the moderate self-efficacy category. Data on the calculation of mean and standard deviation are presented in Table 1.

Table 1. Descriptive Statistics

	N	Mini mum	Max imu m	Me an	Std.De viation	Va ria nc e
Self- effica cy	149	41	95	71.3 8	9.954	99. 07 4
Valid N (listw ise)	149					

Furthermore, since the overall average is divided into six indicators and searched an average of six indicators. The average indicators *self-efficacy* presented in Table 2 below:

Table 2. Average Indicators *Self-efficacy*

Dimen sion	Expressions	average
Level	Students feel optimistic (I-1)	70
	Students feel confident to complete a task or work on the subject of mathematics SD nicely (I-2)	71
Strengt h	Increasing efforts as well as possible (I-3)	74
	Committed to performing duties as a student (I-4)	69
Genera lity	response to circumstances that vary in a way that is good and positive (I-5)	71

Dimen sion	Expressions	average
	Guided by previous experience as a measure of success (I-6)	76

Table 2 shows the best indicator high self-efficacy of it an indicator to 6 (I-6), which averaged 76. this means that a student is good enough to use previous experience as a measure of success. Inversely with the lowest indicators is indicators averages to 4 (I-4) with an average of 69. On this indicator, the students are still weak in committing to carry out duties as a student. Students are still many who do not execute duties as a good student. Therefore, this indicator could be a reference for faculty or students themselves to be able to perform the way that students can make duty as a student well.

For more details, then look for any statements that have self-efficacy a high and self-efficacy is low. In this case, taken respectively 3 statements of high and low statements. The data presented in Table 3 and Table 4 below:

Table 3. Average High Statements *Self efficacy*

Indicator s	Statement	Aver age
I-3	I joined the group work when getting the task group	81
I-5	I love learning group for making I better understand the material that is tough	79
I-6	I'm getting the spirit of learning in the subjects of mathematics more after getting a good grade on a math course before	79



Table 4. Average Low Statements *Self-
efficacy*

Indicators	Statement	Average
I-4	I believe I can overcome the difficulties of its own problems without help from others	58
I-5	I'm still learning through a friend invited to play	60
I-1	I have taken all the courses elementary mathematics properly	65

From Table 3, we can see the self-efficacy of students most high that on one statement on the indicator 3 (I-3). If we connect average indicator 3 in Table 2 is also one of the highest compared to other indicators. One statement of the highest averages were students joined in the group work when getting the task group. This is because of the majority of elementary mathematics lectures, students are always given the task group in completing its tasks, so that in this statement self-efficacy of his high. Similarly, the statement from the I-3, one of the statements of the I-5 also scores self-efficacy were high enough that students prefer to learn groups because it makes them more difficult to understand the material. So, the job of the group given the lecturer during lectures is quite effective in the process of student understanding of the material that the lecturer taught. The last statement the same get a high score that is one of the statements of the I-6. This statement is more enthusiasm for learning on the students in other math courses after getting a good grade in a course of mathematics previously. This statement is a reference to the success of a student in all subjects studied elementary mathematics. For example, someone who gets good grades on the subject of the basic concepts of elementary mathematics in the 1st semester, he got good grades are also on course materials

and instructional media SD 3th semester. And so on.

Conversely, in Table 4 seen some indicators show that the self-efficacy of students in this state is still weak. Statement of the lowest averages is one of the statements of an indicator I-4. If we look at the average I-4 is also the lowest among the other indicators. This means the student has not been able to commit to performing duties as a student, especially in terms of their faith can overcome adversity own problems without help from others. Moreover, the statement of other indicators that support an earlier statement that one of the statements of indicators I-5 that the students have problems when there are friends who invite to play. Most of the students come to play rather than to continue to learn. And the last statement that the average low is also that the implications of two previous statement. In this statement, the students still do not understand all the elementary mathematics courses well. This is why the final grade students of PGSD still do not have a good level of self-efficacy. So that necessary measures can improve self-efficacy student. Mathematically, such an increase in good quality learning, provide motivation/encouragement that the students do all the activities well and giving guidance to any task or job that the students can do well.

IV. DISCUSSION

The result showed that the graduate student level PGSD still do not have good self-efficacy. Therefore, it should be made better. Because based on some research results described by Akay, H. & Boz, N. (2010); Albayrak, M. & Unal, ZA (2012); Ayotola, A. & Adedeji, T. (2009); Hassanzadeh, R. Ebrahimi, S., & Mahdinejad, G. (2012); Memnun, DS, Akkaya, R., & Hacıömeroğlu, G. (2012); Maddux, JE (2000); and Somakin (2010) can be taken some conclusions as follows: self-efficacy prospective teachers towards mathematics literacy are important predictors in the belief solve mathematical problems, self-efficacy is a structure which affects test anxiety. Students who have self-efficacy high decreases test



anxiety, self-efficacy significant influence of style explains the mathematics achievement, that style describes a person affects the achievement and student learning outcomes.

Especially for dimension generality with the indicator "Guided by previous experience as a step to success", has reached an average of 76, the average value is high. A graduate student is able to interpret that previous experience will bring confidence to the success in learning. More away will give the prediction of the ability to teach mathematics. In accordance with the results of Sharma and Nasa (2014) which states that self-efficacy should be relevant to understanding educational outcomes as self-efficacy and motivation lead to specific behaviors that can promote or inhibit effective performance. The performance here can be interpreted academic performance in mathematics taught elementary school.

In line with the results of the above studies, the results of questionnaire mathematical self-efficacy PGSD final year students showed confidence every student in learning, learning process, and do the task subjects PGSD still not good math. If the views of each item questionnaire statement, some students are still many states that do not enjoy learning math, trying to cheat on the exam, have not been able to teach mathematics well as teaching at the elementary school later, and still not confident when it should be an independent assignment. It can be predictive of them because there is no influence of the person (eg parents, teachers, etc.) so that each student can maximize his abilities and have confidence or confidence is good, so the effect on the level of self-efficacy him.

The value of the standard deviation of the data of self-efficacy PGSD graduate student based on the data in Table 1 equal to 9.953 (99.074 variances). It can be interpreted that the data self-efficacy has a high variability among students, so it is necessary to do research or a particular treatment in order to score the average self-efficacy is a graduate student higher and variance are lower, so that not too much gap (high and low) score of self-efficacy among

students. The data analysis of this research is to be conducted further analysis of the correlation between for each self-efficacy indicator, the correlation with eye-related subjects of mathematics, so it will be able to determine alternatives to increase self-efficacy.

Correlation analysis to spy math courses required to be sought against any subjects who had a high correlation so as to look for alternative solutions to spy subjects that have such a high correlation. In the meantime, researchers assume that the required treatment to strengthen eye-subjects related mathematics, among others: Basic Concepts of Mathematics Elementary, Learning Mathematics Elementary Low class, Mathematics Learning SD high grade, Materials and Media Learning Mathematics, Problem Solving math, and Planning Learning was. However, further research will answer exactly what is assumed above is only an assumption or have a strong scientific argument, based on the facts of the research undertaken. Based on the results of the analysis, the study program PGSD may benefit for the improvement of Curriculum Studies such a way that the future can produce students who master the material math, ready trained and ready for work, has self-efficacy is high and has a good character in teaching mathematics Elementary School.

V. CONCLUSION

In conclusion, the first is the level mathematical of self-efficacy PGSD final level students are in the moderate category with an average score of 71.38. The second, which is the highest indicator of average is an indicator to 6 (I-6) by 76 as students are quite good in using previous experience as a measure of success. Indicators of the lowest average is an indicator to 4 (I-4) with an average of 69 are still weak in a committed student to carry out duties as a student. The third one of the statements of the highest average is the students joined in the group work when getting the task group, and a statement that the lowest average is students do not yet have confidence that we can overcome



the difficulties of its own problems without help from others. Lastly, the results of which have been presented to us looking for alternatives to increase mathematical self-efficacy student is one way to improve good quality learning especially on the eye-related subjects of mathematics, provide motivation/encouragement that the students do all the activities well, and giving instruction about any task or job that the students can do well, so as to provide self-efficacy (confidence) and the good character of the final year students to teach mathematics in primary school later.

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