

# Performance of Self-regulated Learning of Mathematics Teachers in a Program of Professional Teacher Training

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**Keywords:** Mathematics teachers, self-regulated learning, teacher professional training.

**Abstract:** Self-regulated learning is a cyclical process, wherein the student plans for a task, monitors their performance, and then reflects on the outcome. Self-regulated learning refers to one's ability to understand and control one's learning environment. The ability to learn independently is one of the characteristics needed in adult learning. Independent learning ability can be developed in the learning process. This study aimed to analyse difference of self-regulated learning of mathematics teachers in a program of professional training before and after they study in FKIP Sriwijaya University. This study was an observational study with comparative cross-sectional approach. The subjects of this study are mathematics teachers in a program of professional training 2018, a number of 30 people. Data was analyzed using t-test. The study found no statistically significant (136,9) and after (141,8) following the professional education program ( $p=0,43$ ).

## 1 INTRODUCTION

The development of a country is also determined by how education is carried out. At the primary and secondary education levels a teacher is an important component in education, because a teacher acts as a teacher and an educator for students. It makes a teacher has a great responsibility in achieving the aims of national education. Teachers whom want to be dedicated themselves with high professionalism to education will make education qualified and create human resources qualified as well.

A professional teacher must have expertise which is gained through a specially programmed education and training process. A formal recognition for the expertise is stated in the form of certification, accreditation, and license from the competent authorities in this case the government and professional organizations. Professionalism of teachers will strategically determine the role of education in global partnerships and also can break the vicious circle of poverty alleviation.

There are many changes in the education paradigm as an implication of globalization and reform and the changes involve four things. First of all, the educational process paradigm that is oriented to teaching where the teacher is more of an information center, shifts to a learning process that is oriented

towards learning where students become sources (student center).

In connection with this, it is undeniable that teacher professional education is a manifestation. Explicitly in the elucidation of article 15 of Law No.20 / 2003 concerning the National Education System, it is stated that professional education is a tertiary education after an undergraduate program that prepares students to have jobs with special skills requirements. According to Kemendiknas (2010), This means that the teaching profession is open, because the program of professional teacher training can be followed by all candidates who have completed the undergraduate program. Article 10 of Law No. 14 of 2005 concerning Teachers and Lecturers also states that teachers' professional competencies are obtained through professional education.

The program of professional teacher training curriculum was developed with reference to the principle of activity based curriculum or experience based curriculum instead of curriculum subject matter as in academic education. The implication of this principle, according to Merry, Koehler & Mishra (2016) learning in the program of professional teacher training takes the form of activities, namely in the form of a learning device development workshop as a form of implementation of the TPACK concept, namely technological pedagogical content knowledge.

Learning activities in the program of professional teacher training require participants to conduct it independently. These activities require learning independence for the participants. According to Mujiman (2011) independent learning is an active learning activity, which is driven by a motive to master something of competence, and is built with the provision of knowledge or competence that has been owned. In determining competency as a learning goal and how to achieve it, the determination of learning time, place of learning, learning rhythm, the tempo of learning, the way of learning, learning resources, and the evaluation of learning outcomes are carried out on their own.

Independent learning can be say self-regulated learning. Self-regulated learning definition can be identify by three aspects, meta-cognition, motivation, and behavioral (Zimmerman, 1990; You & Joy, 2008; Pintrich & Zusho, 2002). According to Pintrich & De Groot (1990) there are many definitions of self-regulated learning, there are three components of self-regulated learning, meta-cognitive, management, and students' conceptualization.

From the description above it can be concluded that students with self-regulated learning have indicators such as, not relying on others, having an attitude of responsibility, confidence, being able to control themselves, evaluate themselves and have awareness for independent learning. Self-regulated learning is important to achieve optimal student learning achievement. Students who have indicators of self-regulated learning will be better in the learning process.

When taking professional training, there is a problem about students' self-regulated learning at the teacher professional training stage, and there has not been much learning innovation in the teaching profession, as well as the obstacles that occur in the teaching profession, so this research was conducted. The purpose of this study was to determine the differences in self-regulated learning of mathematics teacher in the program of teacher professional training stage before and after undergoing learning in the field of mathematics. The benefits of this study are expected to provide input for curriculum development in the program of professional teacher training stage.

## 2 METHODS

This study was an observational study with a comparative cross sectional approach. The variable of this study is the self-regulated learning of mathematics teachers of program of teacher

professional training. Self-regulated learning is one of the ways that students do active learning which is driven by the motive of mastering competence, and is built based on the knowledge they have. Self-regulated learning means developing active and participatory learning methods for students to improve their skills and abilities in the learning process without being bound by lecturers or classmates, lecturers only act as facilitators. The indicators in self-regulated learning to facilitate the discussion of student learning independence are as follows: (1) Dependence on others, (2) Having confidence, (3) Be disciplined, (4) Have a sense of responsibility, (5) Acting on your own initiative, (6) Perform self-control.

The subject of this study were 30 mathematics teachers in a program of teacher professional training at the FKIP of Sriwijaya University in 2018. The instruments are arranged in a Likert scale which is an instrument that is self-report. Instrument measurement is done twice, in the first and last week students are in the teaching profession education. Data analysis was carried out by *t-test*.

## 3 RESULT AND DISCUSSION

The majority of teachers who take this program which are the sample in this study are women. Most of the samples live in boarding houses and they have taken training for two months. To measure the self-regulated learning variables, an instrument consisting of 50 items in a four-scale form with the lowest theoretical score of 50, the highest score of 200 is used.

Table 1: Description of mathematics teachers' self-regulated learning before and after the professional stage.

Score	Mini mum	Maxi mum	Average
Self-regulated learning before taking a professional stage.	121	187	136.9
Self-regulated learning after taking a professional stage.	105	172	141.8

The mean value of self-regulated learning after taking the program of teacher professional training is higher than the previous value, showed by Table 1. Data processing with t test obtained the value of  $t = -0.642$ ,  $p = 0.43$ . Thus there is no statistically

significant difference self-regulated learning in before and after undergoing the stage of the program.

The learning that is done is learning as it is, which is usually done at the stage of professional training, without the innovations being made to improve the effectiveness of learning. In the implementation of the program of teacher professional training learning process outline consists of workshops which include: 1) the deepening of the material in the area of expertise to be taught; 2) deepening of the subject matter of the pedagogic field; 3) learning device development workshops; 4) peer learning practices.

Supervisors in the program of teacher professional training have many routine tasks that must be done, not only guiding teachers in the teaching profession stage, but also guiding mathematics education students. The narrow time that can be used to guide teachers at the program often causes learning to run spontaneously and without planning. Innovations need to be carried out, especially so that learning objectives and methods can foster self-regulated learning.

Seeing the condition of the current stage of program of teacher professional training, teachers should have sufficient self-regulated learning, to compensate for things that can hinder the achievement of their competence. Based on the results of this study, the selection of appropriate learning methods, the quality of the guidance of guidance given the limited lecturer time, and the improvement of the ability of lecturers can be an alternative for professional learning innovation.

According to Watmough, O'Sullivan and Taylor (2010), the curriculum is one of the things that can influence the development of self-regulated learning, for the stage of program of teacher professional training further exploration of the curriculum and any learning methods that can develop self-regulated learning need to be carried out.

The results of this study stated that there was no statistically significant difference in self-regulated learning before and after undergoing the learning phase of program of teacher professional training. More research is needed on alternative interventions that need to be done as a way to develop teachers' self-regulated learning, as well as similar research by increasing the number of samples.

There are five indicators of self-regulated learning achievement, which are: 1. Not depending on other people, 2. Having self-confidence, 3. Behaving discipline, 4. Having responsibility, and 5. Doing initiatively.

Table 2: Indicator of not depending on other people.

Category	Indicator 1			
	Before		After	
	Σ	%	Σ	%
High	3	10	4	13,3
Middle	22	73,3	23	76,7
Low	5	16,7	3	10
<b>Total</b>	<b>30</b>	<b>100</b>	<b>30</b>	<b>100</b>

Table 2 shows that before taking the PPG class the indicator of not depending on other people was only 10% for high level of independency and it improved after joining the PPG class becoming 13.3%.

Table 3: Indicator of having self-confidence.

Category	Indicator 2			
	Before		After	
	Σ	%	Σ	%
High	6	20	8	26,7
Middle	21	70	21	70
Low	3	10	1	3,3
<b>Total</b>	<b>30</b>	<b>100</b>	<b>30</b>	<b>100</b>

Table 3 shows that before and after taking the PPG class there is no any difference at the middle level of self-confidence. Meanwhile at the high level of self-confidence there is improvement from 20% becoming 26.7%.

Table 4: Indicator of behaving discipline.

Category	Indicator 3			
	Before		After	
	Σ	%	Σ	%
High	2	6,7	2	6,7
Middle	25	83,3	26	86,6
Low	3	10	2	6,7
<b>Total</b>	<b>30</b>	<b>100</b>	<b>30</b>	<b>100</b>

Table 4 shows that before and after taking the PPG class there is no any difference at the middle level of behaving discipline.

Table 5: Indicator of having responsibility.

Category	Indicator 4			
	Before		After	
	Σ	%	Σ	%
High	1	3,3	1	3,3
Middle	20	65,3	22	73,3
Low	9	31,4	7	23,4
<b>Total</b>	<b>30</b>	<b>100</b>	<b>30</b>	<b>100</b>

Table 5 shows that before and after taking the PPG class there is no any difference at the middle level of having responsibility .

Table 6: Indicator of doing initiatively.

Category	Indicator 5			
	Before		After	
	$\Sigma$	%	$\Sigma$	%
High	7	23,4	7	23,4
Middle	22	73,3	22	73,3
Low	1	3,3	1	3,3
<b>Total</b>	30	100	30	100

Table 6 shows that before and after taking the PPG class there was no any difference at all level of doing initiatively.

#### 4 CONCLUSIONS

There is no statistically significant difference self-regulated learning of mathematics teachers in before and after undergoing the stage of the program of teacher professional training.

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