



## The Effect of Self Regulated Learning on Learning Outcomes of Mathematics Education Students in Online Lectures

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### Abstract

Self Regulated Learning during online lectures plays a very important role in the success of student learning. Activities to determine the effect of Self Regulated Learning on student educational professional learning outcomes is the purpose of this study. The research method used in this study is a survey method using simple linear regression analysis. The sample was obtained using a saturated sample, namely the entire population of 25 students of the mathematics education study program at Ninebelas November Kolaka University in the odd semester of the 2020/2021 academic year. Data collection was carried out by providing self regulated learning questionnaires and essay tests on learning outcomes of the educational profession. Data analysis was carried out using the SPSS program consisting of descriptive analysis analysis, classical assumption test and research hypothesis testing. Classical assumption test in the form of normality test and linearity test. The conclusion of the research that has been carried out is that there is a significant positive effect between self regulated learning on the learning outcomes of the educational profession in students of the mathematics education study program. The large contribution of self regulated learning to the learning outcomes of the educational profession is 23.5% and 76.5% is contributed by variables other than self regulated learning.

**Keywords:** Self Regulated Learning; learning outcomes of the educational profession; online lecture

## A. Introduction

The education profession course in the mathematics education study program is a course that learns about the profession of a mathematics teacher who understands the code of ethics so that in carrying out his duties as a mathematics teacher he does not deviate from the applicable code of ethics (Hali, 2021c). The number of trainings for teachers has been prepared by the government in order to create competent and professional teachers in education (Hali & Herlina, 2018). So that the learning outcomes of the educational profession are very important for educational students as prospective professional teachers.

However, the Covid-19 outbreak has caused online learning activities to be carried out by the government with a study from home program so that the implementation of learning continues even during the COVID-19 pandemic (Hali, 2021b). In addition, the implementation of online learning is carried out to fulfill students' rights to obtain educational services during the covid-19 emergency (Farman et al., 2021). The challenges faced by students during the distance learning period applied on campus in the context of preventing COVID-19 are very diverse (Hali et al., 2021).

This condition has the potential for conducting lectures that do not require time and place. These lectures are often termed online lectures. The good side of online lectures is that students are required to be more active than traditional teaching. This is based on the fact that online lectures are outside the direct supervision of the teaching lecturer, students are required to be more creative in accepting the lecture material provided so that they can ask questions or provide feedback when the lecturer provides unclear information or can give ambiguous interpretations in lectures.

Provide a path to a student-centered teaching and learning system (Student Learning Center). The activities carried out by students in online lectures allow students to get used to being independent in following the stages of lecture activities.

Therefore, students must be aware of their own learning, plan their learning, monitor and reflect on their learning which is known as self regulated learning. Self Regulated Learning is an important factor in determining student success in the lecture process. Self Regulated Learning according to Hadi & Farida (2012) is a learning activity based on one's own ability, choice and responsibility for learning activities (Hali, 2021a). Students are required to be responsible for making decisions related to their learning process and have the ability to carry out the decisions they make. Self Regulated Learning as a process of careful design and self-monitoring of cognitive and affective processes in completing an academic task (Daulay, 2021; Nurhafsari, 2019; Sudiana et al., 2019; Zamnah, 2017). Next Sudiana et al., (2019) argues that self regulated learning is not a mental ability or certain academic skills, but is a process of self-direction in transforming mental abilities into certain academic skills. Self regulated learning means learning based on the abilities possessed. It is strengthened (Sudiana et al., 2019; Wulansari, 2016) which suggests that self regulated learning is the ability to monitor one's own abilities, and is the hard work of human personality. The development of Self Regulated Learning is very necessary in the success of the lecture process. Students who have high self regulated learning tend to be able to learn better, able to monitor, evaluate, and manage their study schedule effectively. More than that, students can estimate the time in doing assignments.

Indicators of self regulated learning used in this study are: 1) the attitude of not expecting direction from others; 2) self-confidence; 3) original attitude or not just imitating others; 4) the attitude of wanting to try yourself (Iswandari, 2021; Ramadhani, 2018; Wahana & Fisika, 2013).

Self Regulated Learning is needed in the education system in order to achieve lecture goals that emphasize active students in developing their potential. This is because students can control themselves the various ways of learning that need to be taken to achieve learning achievement results in accordance with their wishes. Optimal learning achievement in higher education in the student learning process can be obtained by the existence of student self regulated learning. Although sometimes it has not been done optimally so that it results in low learning outcomes. The fact shows that there are still many students who study without planning, monitoring, controlling and evaluating in learning. Students do not work on assignments on time, acknowledge other people's assignments as their own, and do not study continuously at home. This shows that students do not yet have good self regulated learning, which of course will provide the possibility of influencing their learning outcomes, especially the learning outcomes of the educational profession.

The results of previous studies indicate that there is a positive relationship between independence and learning outcomes and the relationship is significant (Bramantha, 2019; Maskun & Imanita, 2019; Siregar & Siregar, 2020; Wahana & Fisika, 2013). There is a positive and significant influence between student discipline and independence on learning outcomes (Arrahmi et al., 2014; Sobri & Moerdiyanto, 2014; Winata et al., 2021).

Based on the description above, the research aims to determine the effect of Self Regulated Learning on the learning outcomes of the educational profession students of the mathematics education study program.

## B. Methodology

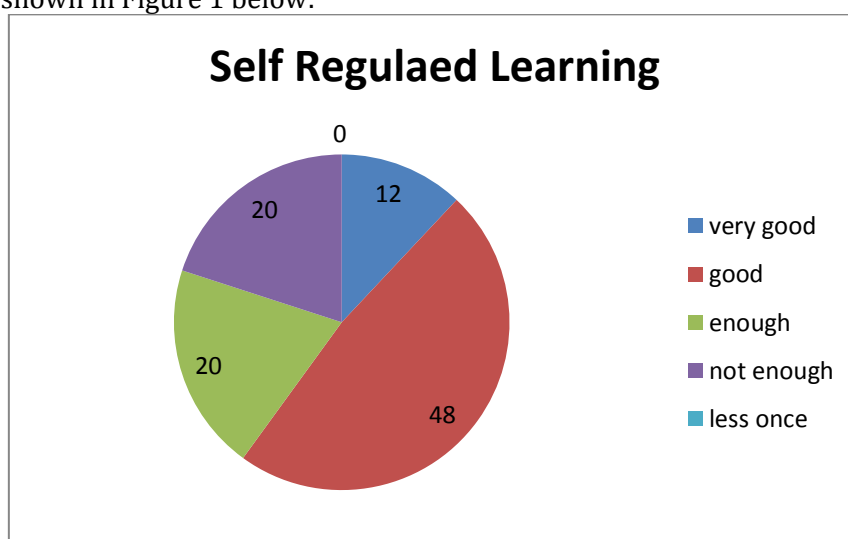
This study uses a quantitative approach. The time of the research was carried out in the odd semester of the 2020/2021 academic year at the Mathematics Education Study Program, Faculty of Teacher Training and Education, Ninebelas November University, Kolaka. The research method used is a survey method with simple linear regression analysis, which is to examine the effect of the Self Regulated Learning variable on the dependent variable on the learning outcomes of the educational profession. The variables studied were student self regulated learning (X) and learning outcomes of the educational profession (Y).

The research population is all students who program the educational profession courses in the mathematics education study program. While the sample is a saturated sample of 25 students. The research instrument used was a questionnaire (questionnaire) to determine student self regulated learning and a written test to determine student educational professional learning outcomes. The data collected in this study is data on self regulated learning and learning outcomes of the educational profession. Self regulated learning data were collected from questionnaires given to students after lectures on the education profession course. The data is in the form of a statement with a Likert scale and processed into an assessment form of 0 to 100. While the learning outcomes data are obtained from the test results given after lectures for the educational profession course in the form of an essay test with an assessment of 0 to 100. Testing the data analysis requirements used consists of a test normality and linearity test. While the hypothesis testing used is a simple linear regression test.

## C. Findings and Discussion

### 1. Findings

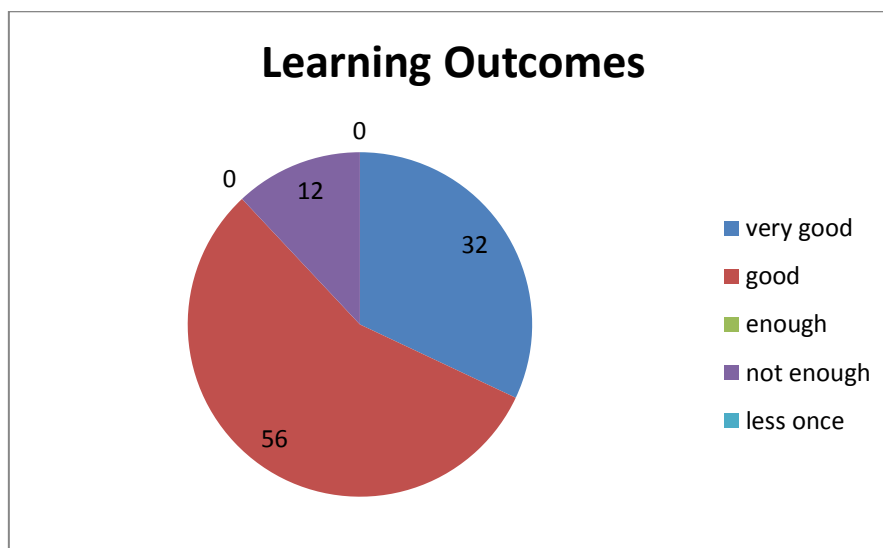
The results of descriptive analysis of research data obtained an average student self regulated learning of 72.9328, with a variance value of 116.061, and a minimum and maximum value of 53.33 and 96.67, respectively. Student self regulated learning data is also categorized into five categories as shown in Figure 1 below.



**Figure 1.** The percentage of students in each category of self regulated learning

The results of descriptive analysis of research data obtained that the average student learning outcomes of the educational profession were 71.548, with a variance value of 116.091, and a minimum and maximum value of 50 and 86.67, respectively. Data on the learning outcomes of

student education professions are also categorized into five categories as shown in Figure 2 below.



**Figure 2.** Percentage of the number of students in each category of educational profession learning outcomes

Next is the classical assumption test of research data in the form of normality test of residual data and linearity test. Normality test was conducted to determine whether the data obtained by the researcher came from a normally distributed population or not. This is done as a condition if the test is carried out with non-parametric statistics. In conducting the normality test, researchers used SPSS 20 as a tool. In this case the researcher uses Kolmogorov Smirnov in conducting the test. The results of the normality analysis of the data, obtained a significant value of  $0.875 > 0.05$  so it can be concluded that the tested data is normally distributed.

While the linearity test was carried out to determine the linearity of the relationship between the Self Regulated Learning variables and the learning outcomes of the student education profession using SPSS 20. The results of the linearity test of the data, obtained the value of Sig. Deviation From Linearity is 0.144. Because the value of Sig.  $0.144 > 0.05$ , it can be concluded that there is a linear relationship between the variable of self regulated learning and the variable of learning outcomes of the educational profession.

The classical assumption tests of this research data have been met so that the next step is to test the research hypothesis with simple regression analysis. Hypothesis Testing Hypothesis testing and data analysis were carried out with the help of SPSS 20. The results of hypothesis testing can be seen in table 1 below:

**Table 1.** Regression Coefficients and Significance Test

Model	Unstandardized		Standardized	t	Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta		
(Constant)	36.222	13.445		2.694	0.013
1 Self Regulated Learning	0.484	0.182	0.484	2.655	0.014

**a. Dependent Variable: learning outcomes**

Based on table 1, obtained Sig. = 0.014 or Sig.  $< 0.05$ . This shows that there is a significant effect of self regulated learning on the learning outcomes of the mathematics education profession. This is in accordance with the results of the study that for a student and teacher if he has the ability to learn independently or Self Regulated learning, he is able to manage time well so that his learning success, his achievement increases and can achieve the objectives of the lecture optimally (Ana & Achdiani, 2017; Hadwin, 2012; Merrotsy, 2018; Puspita & Rustika, 2018).

The results of this study also show that students who have higher self regulated learning will have higher learning outcomes for the educational profession as well. Linear regression

equation:  $Y = 36.222 + 0.484 X$  this shows that each increase of one unit of self regulated learning will significantly increase the learning outcomes of the educational profession by 0.484 units.

Based on the results of SPSS 20 statistical calculations and tested the first hypothesis that there is a significant positive effect of self regulated learning on the learning outcomes of the mathematics education profession, it can be interpreted that student self regulated learning will improve the learning outcomes of the mathematics education profession. This is in accordance with the results of the study (Aini & Taman, 2012; Bramantha, 2019; Bungsu, T. K., Vilardi, M., Akbar, P., & Bernard, 2019; Indah & Farida, 2021) which states that there is a significant positive influence on self regulated learning on learning outcomes.

Independence is something that plays an important role in lectures, especially in the mathematics education profession. This is because self regulated learning is the ability of students to carry out learning activities with their own encouragement and without coercion. Self Regulated Learning also plays a role in improving mathematics learning outcomes. So it is necessary to develop student self regulated learning so that it can be maximized in every lecture.

Furthermore, the results of the analysis of the value of the variable contribution can be seen in table 2 below:

**Table 2.** The value of the coefficient of determination R square

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.484 <sup>a</sup>	0.235	0.201	9.62942

a. Predictors: (Constant), Self Regulated Learning

Based on table 2, the value of  $R = 0.484$  shows that there is a low correlation between self regulated learning and the learning outcomes of the mathematics education profession. This is supported by the value of  $R \text{ Square} = 0.235$  or the determinant coefficient is 23.5%. This means that learning outcomes are influenced by self regulated learning factors by 23.5% and other factors by 76.5%.

## E. Conclusion

There is a significant positive effect of self regulated learning on the learning outcomes of the mathematics education profession. The large contribution of self regulated learning to the learning outcomes of the mathematics education profession is 23.5% and the remaining 76.5% is contributed by variables other than self regulated learning.

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