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## THE ROLE OF SELF-REGULATED LEARNING STRATEGY WITH SELF EFFICACY TO STUDENTS' CONCEPTUAL UNDERSTANDING

*Yowelna Tarumasely<sup>1</sup>, I Nyoman Sudana Degeng<sup>2</sup>, Punaji Setyosari<sup>3</sup>, A.J.E. Toenlio<sup>4</sup>*

<sup>1,2,3,4</sup>Instructional Technology, Graduate School, Universitas Negeri Malang, Indonesia,

<sup>1</sup>[yowelnatarumasely@gmail.com](mailto:yowelnatarumasely@gmail.com) <sup>2</sup>[nyoman.sudana.d.fip@um.ac.id](mailto:nyoman.sudana.d.fip@um.ac.id)

<sup>3</sup>[punaji.setyosari.fip@um.ac.id](mailto:punaji.setyosari.fip@um.ac.id)

<sup>4</sup>[Anselmus.je.fip@um.ac.id](mailto:Anselmus.je.fip@um.ac.id)

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### ABSTRACT

This study aims to analyze the effect of self-regulated learning strategy and self efficacy on the learning outcomes of understanding concepts for second semester Christian Religious Education students. The research subjects were 96 people who were divided into two groups namely the experimental and control groups. Data were obtained using Neil's self efficacy questionnaire and tests to measure learning outcomes from conceptual understanding. The data analysis uses two-way ANOVA. The results show that there are differences in learning outcomes in understanding concepts between self-regulated learning strategy and teacher regulated learning strategy, with high and low self efficacy levels, and there is an interaction between learning strategies and self efficacy on learning outcomes in conceptual understanding. This means that self-regulated learning strategy and self efficacy has a better influence on the results of conceptual understanding of Learning Theory. This study is beneficial for education systems, teachers, and student, as it reveals an effective way of learning and understanding concept. It may also be beneficial for future researchers in the respective field.

### INTRODUCTION

The ability possessed by someone after following a learning process is often referred to as learning outcomes, (Kenedy, Hyland, & Ryan, (2009). Learning outcomes, according to Bloom (in Anderson &Kratwohl, 2010) are classified into

three domains: cognitive, affective, and psychomotor. To applying these three domains, one must go through it gradually, starting from the simplest level to the most complex level. One form of achievement or learning outcomes in the cognitive domain is conceptual understanding. Conceptual understanding is the basis for someone to build further knowledge with good conceptual understanding, students will be better at developing their abilities, and Mills (2016), also points out that conceptual understanding is a basis for constructing subsequent knowledge.

Research in the world of education that discusses conceptual understanding for students has been done a lot, both related to the age of education level and related to other fields. The other fields are for example science (Bilgin 2006; Hamzah, 2010, Saleh, 2011, Cetin, 2015; Saricayir, Ay, Cansiz, &Uce, 2016), Engineering (Savander-Ranne, 2003), and social (Mathe, 2016; Baidon, Lin, & Chia, 2016).

The results show that the conceptual understanding of students is incomplete or inaccurate in their respective fields. Smith - Ragan argues that conceptual understanding is not only the ability to memorize various information, but also requires ability so that the information that has been obtained can be applied to other unexpected experiences or situations (Saricayir et. al. 2016). With a good conceptual understanding, students are able to climb more complex cognitive levels, (Fitriyane, et. al. 2018). In line with this, Brook & Brocks (in Sugiarti, 2012), suggests that the effort to build the conceptual understanding of students is an important problem in the world of education that needs to be solved.

The importance of conceptual understanding as a form of students' basic mastery of the lessons that have been delivered by educators is also felt to be necessary for students, especially second semester students. Given that the second semester students are categorized as students who are new to the world of higher education, thus requiring a process of adjustment to the academic climate in higher education, one of which is a learning strategy. Learning strategies in higher education differ from the learning strategies used in secondary schools, where teachers are more dominant than students. In secondary schools, students only act as listeners, and teachers are more instrumental in regulating the learning process of students, about when, where, whatsources should be used, and how students learn. It is known as teacher centered learning.

According to Vishnumolakala, et al. (2017), in the Teacher Centered Learning, the dynamics of learning tend to make students the recipients of information (passive responder) without considering them to actively participate, thus making students less self-sufficient in learning, lack of motivation to try, lack of ability to transfer knowledge possessed, lack of confidence in their own abilities, lack of ability to regulate themselves in learning, and also make them not ideal in developing thinking skills. Meanwhile, the learning strategy in higher education requires students to be more active, students must be given the opportunity to organize their own learning on when, where, what resources will be used, and how they learn.

Learning strategies that are in accordance with the nature of learning in college are learning strategies that provide opportunities for students to organize themselves to learn, or known as self-regulated learning. Self-regulated learning is an activity in which individuals can learn actively, compile, determine learning goals, plan and monitor, regulate and control cognition, motivate behavior and their environment to achieve the stated goals (Filho, 20001; Pintrich, 2004; Wolters, et al, 2003). Some research results show that self-regulated learning strategy is very effectively used as a learning strategy to improve the learning outcomes in understanding facts, concepts, principles and procedures.

Self-regulated learning strategies can help students determine the first step to learning, determine their needs, set their learning goals, explore learning resources, manage time and environment, and apply them effectively to achieve satisfying learning outcomes (Zhu, Au & Yates, 2016 ) Veeanam (1999) found that the self-regulated Learning strategy had an effect on the application of theory in medical practice in the classroom, then, Pauli (2007) stated that the influence of self-regulated learning strategies had been proven in solving mathematical problems independently while finding of NajvaNajabati (2015) shows that the self-regulated learning strategy significantly influences reading comprehension, Nurlaela (2012) states that self-regulated learning strategies affect learning outcomes. The same thing was also expressed by Siti Suminarti and Siti Fatimah (2013), that self-regulated learning strategies can improve academic achievement, (OslemSadi, MirayUyar, 2013).

In addition to learning strategies, one of the requirements for successful learning is determined by student characteristics. Carey & Carey (2001) stated that; information about the group's general characteristics may be very helpful in planning instruction tailored to group need ". Student characteristics are all backgrounds that are brought into the classroom before learning begins. Reigeluth (2009) explains that optimal learning outcomes are strongly influenced by the application of learning procedures that consider the assessment system, methods, conditions (characteristics) of students, material and learning objectives. Therefore, lecturers need to pay attention to methods, subject characteristics and learning objectives, as well as student conditions, when carrying out classroom learning. Self efficacy according to Bandura (in Santrock 2008: 298) is the belief held by students about ability in an effort to complete tasks, about their perseverance, and also about their achievements. The results showed that students with high self efficacy had high academic achievement, whereas students with low self efficacy had low performance (Angela Willson-Conrad and Megan GrunertKowalske, 2017). Thus, self efficacy significantly improves learning outcomes.

## **THEORETICAL REVIEW**

### ***Conceptual Understanding***

Conceptual understanding is an important aspect that needs to be considered by a learner. Also, conceptual understanding according to Bloom is included in the cognitive domain. Sagala (2011) suggests that understanding is an intellectual

ability to capture the meaning of something. Bloom explains the understanding of concept understanding, which contains indicators in it, namely the ability to grasp understanding, translating, and interpreting (Regeilutuh and Moore, 1999), while Regeiluth-Chelimen (2009) suggests that comprehension is higher –level learning outcomes asking for students to grasp meanings such as distinguish, predict, and so forth.

A person's understanding is also characterized by the ability to articulate something through ways of expressing ideas, perspectives, solutions and their products that are ready to be contemplated, criticized, and used by others (Dunlap and Grrabinger, 1996). Willis (2000) argues that someone is said to understand if he can show the performance of conceptual understanding at a higher level of ability both in the same context and in different contexts.

### *Self-regulated Learning Strategy*

Zimmerman was the first person to write about self-regulated learning (Ernesto Panadero, 2015). There are several theoretical explanations and perspectives on self-regulated learning such as social cognitive theory, will theory and phenemology (Zimmerman, 2001). Self-regulated learning demonstrates the ability of students to actively and deliberately set goals for their learning and to monitor, regulate, control and evaluate their cognitions, behaviors, motivations and environment to achieve their learning goals (Pintrich, 2004; Zimmerman, 2001). Pintrich (2000) describes self-regulated learning as: "an active and constructive process in which students set goals for their learning and then try to monitor, regulate, and control their cognition, motivation and behavior, and are guided and limited by purpose and contextual features of their environment".

In the learning activation and innovation process, self-regulated learning strategies are applied to guide proactive students to learn using Pintrich 2004 models, namely: 1) Forethought, planning, and activation, 2) Monitoring, 3) controlling, and 4) Reaction and reflection. Based on the steps of SRL proposed by Pintrich, steps for learning strategies based on self-regulated learning were made, as in the table below:

**Table 1.** *The steps of Self-regulated Learning Strategy in the Subject of Learning Theory*

Procedure		Activities	
Learning Activities	Self-regulated Learning Strategy	Lecturer	Students
Preliminary activities	Forethought, planning and activation	Deliver the learning objectives	<ol style="list-style-type: none"> <li>1. Students hear and take notes.</li> <li>2. Students analyze their learning assignments based on the learning objectives delivered</li> <li>3. Students determine their learning goals</li> <li>4. Students determine how to learn.</li> <li>5. Students actively seek information with several sources, modules, internet, libraries, etc.</li> </ol>
Core activities	Monitoring Controlling	<ol style="list-style-type: none"> <li>1. Monitor student activities.</li> <li>2. Control student activities (For this phase the lecturer can help students if they encounter obstacles)</li> </ol>	<ol style="list-style-type: none"> <li>1. Monitor the progress in completing tasks, and monitor the effectiveness of the chosen strategy</li> <li>2. Monitor the motivation in completing tasks. (Students can ask lecturers or friends)</li> </ol>
Closing activity	Reaction and reflection	Evaluate performance according to standards	Evaluate performance on learning assignments <ul style="list-style-type: none"> <li>• Manage emotional responses related to results learning experience (taking action).</li> </ul>

### *Self-efficacy*

The term self efficacy was first created by Albert Bandura in 1977. Self efficacy is self-confidence in one's own ability to carry out tasks that are determined effectively (Bandura 1986, 1997). The theory of self efficacy is considered one of the approaches to the application of social learning theory or social cognitive theory. According to Betz & Hackett (1988), self efficacy has an important role in the belief in the ability of students in achieving success in the task or behavior that is expected. Self efficacy is the students' self-confidence in their own ability to do certain tasks effectively (Yesilyurt, Ulas& Akan, 2016: 592).

### **RESEARCH METHODOLOGY**

This study uses quasi-experimental research to test hypotheses about causal relationships between variables (Degeng, 2000: 13). The research design used was factorial 2 x 2 designs (Degeng, 2000: 15, Setyosari, 2012: 180). The design of the study can be seen in table 1.

**Table 2** *Factorial Design 2x2*

FreeVariable		LearningStrategy	
		Self-regulated Learning (SRL)Strategy (A1)	Teacher Regulated Learning (TRL)Strategy (A2)
Variable Moderator			
<i>Self efficacy</i>	High ( B1)	A1b1	A2b1
	Low ( B2)	A1b2	A2b2

#### **Notes:**

1. A1B1 Group: Learning outcomes with self-regulated Learning Strategy and high Self efficacy
2. A1B2 groups: Learning outcomes with self-regulated Learning Strategy and low Self efficacy
3. Group A2B1: Learning outcomes with Teacher Regulated Learning Strategy and high Self efficacy
4. Group A2B2: Learning outcomes with Teacher Regulated Learning Strategy and high Self efficacy

The research subjects were the second semester students of the Christian Religious Education study program at the Ambon State Christian Religion Institute for the 2017/2018 academic year, which consisted of 4 parallel classes (classes A, B, C, and D). Each class numbered 23 people so that the total number was 96 people, then divided into two groups namely the experimental group and the control group. The experimental class is class A and classes B, while class C and class D are the control group. During the learning process, all students followed from the

beginning of the learning activities to the end, both for the experimental class and the control class, thus the research subjects was 96 people. Further explanation about the research subject can be seen in the following table:

**Table 3.** *Research Subjects Based on Experimental Groups and Control Groups*

No	Experiment Group		Control Group		Number of students
	Class	Number of students	Class	Number of students	
1	A	23	C	23	46
2	B	23	D	23	46
Total	2	46	2	46	96

The instrument used in this study consisted of tests and questionnaires. The form of the test is multiple choice, to measure conceptual understanding. The number of questions used is 25 items with a score of the correct answer 1 and a score of 0 for the wrong answer. The questionnaire used to collect data related to self efficacy that refers to Neil (2008). The questionnaire consisted of 35 items, using a Likert scale with a range of 1 to 4. To categorize the research subjects based on high or low self efficacy, conducted by looking for a median using SPSS, the median value obtained was 104. Based on the midpoint, then Research subjects who scored below 104 were grouped in subjects with low self efficacy and research subjects who scored above 140 were grouped in high self efficacy research subjects.

The data analyzed was divided into two, the first as a requirement to conduct ANOVA analysis and the second to test the research hypothesis. Then, for the analysis requirements in the form of data normality test and homogeneity test, the data normality test is using Kolmogorov-Smirnov and variance homogeneity test is using Leven's test. Data normality and homogeneity tests were carried out to fulfill parametric assumptions as ANOVA test requirements. Meanwhile, the data analysis to test the research hypothesis uses the two-tailed ANOVA statistical technique with the SPSS for Windows program. And all parametric assumption tests were carried out at a 5% significance value.

## RESULTS

### *The Results Description of Conceptual Understanding Pretest*

Before the research and treatment is given, the pretest is first performed on students who will be involved in the research to find out the initial abilities they have in relation to the Learning Theory Course. Pretest results are presented in the following table:

**Table 4.** *Conceptual Understanding Pretest Results*

	N	Min	Max	Mean	Std.D
Pretest (Experiment Class)	46	60	72	66,17	4,276
Pretest (Control Class)	46	60	72	65,48	4,247
Valid N (Listwise)	60				

Table 4 shows that the average value of the pretest conceptual understanding for the experimental class is 66.17, with a standard deviation of 4.276, while the average value obtained by the control class is 65.48, with a standard deviation of 4.247. The average value of the experimental class pretest is higher than the control class.

### *The Description of Self Efficacy*

*Self efficacy as a moderator variable is divided into two, namely high self efficacy and low self efficacy. The following table presents the results of the measurement of the research subject groups based on learning strategies and self efficacy:*

**Table 5.** The Description of Research Subjects Based on Learning Strategies and Self-efficacy

Class	Self efficacy		Total
	High	Low	
Self-regulated Learning	23	23	46
Teacher Regulated Learning	23	23	46
Total	46	46	92

**Table 5** shows that self-efficacy for the experimental class (self-regulated learning based learning strategy) is 23 people, and 23 students have low self-efficacy, as well as the control class (teacher regulated learning strategies). learning) the subjects who have high self efficacy are 23 people, and students who have low self efficacy are 23 people.

### *The Result Description of Conceptual Understanding Posttest*

The results of the conceptual understanding posttest in this study were obtained after groups of research subjects were treated with Self-regulated learning strategy and teacher regulated learning strategy. The results of the posttest of conceptual understanding are shown in Table 4 below.



**Table 6.** The Posttest Resultsof Conceptual Understanding

LearningStrategy	Self efficacy	Mean	Std. Deviation	N
Self-regulated Learning	High	79.48	5.160	23
	Low	69.04	5.423	23
	Total	74.26	7.431	46
Teacher Regulated Learning	High	74.96	5.148	23
	Low	66.43	4.305	23
	Total	70.70	6.370	46
Total	High	77.22	5.585	46
	Low	67.74	5.017	46
	Total	72.48	7.112	92

**Table 6** above shows the results of the conceptual understanding of the experimental group, namely self-regulated learning strategy with a group of students who have high self efficacy of 23 people obtained an average value of 79.48, with a standard deviation of 5.160, students who have a low self efficacy of 23 people obtain an average value of 69.04, with a standard deviation of 5.423. Furthermore, the learning outcomes of conceptual understanding obtained by the control class, the class taught by using teacher regulated learning strategy with high self-efficacy obtained an average value of 74.96, with a standard deviation of 5.148. While the group of students who have Low self efficacy obtained an average value of 66.43, with a standard deviation of 4.305

The posttest results showed a significant difference in the results of conceptual understanding of the experimental group with the control group. Based on posttest results, the average value of the learning outcomes of conceptual understanding for the experimental class is 74.26 with a standard deviation of 7.431 and a control class of 70.70 with a standard deviation of 6.370. This shows that the average value of the experimental class is higher than the average value of the control class.

From the posttest score of conceptual understanding for groups of students who have high self efficacy, the average value is 77.22 with a standard deviation of 5.585, while the conceptual understanding score for students who have low self efficacy has an average score of 67.74 with a standard deviation of 5,017. This shows that in the group of students who have high self efficacy, the results of conceptual understanding are better than the group of students who have low self efficacy.

### ***Test Requirements for Analysis***

To test the hypotheses proposed in this study, the independent variables are the self-regulated learning strategy and teacher regulated learning strategy, the moderator variable is self efficacy and the dependent variable is the conceptual understanding of learning outcomes, tested using ANOVA. (Analysis of Variance), before carrying out the analysis, an examination of the results of the data is carried out

first by the ANOVA analysis requirements test, which includes the test for variability and normality.

### *Normality Test*

The normality test is used to find out whether the data are normally distributed or not, as one of the prerequisite tests to conduct a two-tailed ANOVA analysis test. The following are the results of the posttest of conceptual understanding data normality test:

**Table 5.** *The Normality Test Results of Conceptual Understanding Posttest*

	LEARNING STRATEGY	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
		Statistic	Df	Sig.	Statistic	Df	Sig.
CONCEPTUAL UNDERSTANDING	SRL	.120	46	.097	.962	46	.131
	TRL	.151	46	.011	.958	46	.099

Based on the table above, the results of the normality test using Kolmogorov-Smirnov show that the significance value of conceptual understanding learning outcomes for self-regulated learning strategies and teacher regulated learning is greater than 0.05 ( $0.97 > 0.05$ ,  $0.11 > 0.05$ ). This means that data on learning outcomes conceptual understanding is normally distributed.

### *Homogeneity Test*

The homogeneity test was carried out to determine the homogeneity of the variance of score data from the results of conceptual understanding using Leven's test, the following are the results of homogeneity tests in the table below:

**Table 6.** *The Homogeneity Test Results of Conceptual Understanding Posttest*

F	df1	df2	Sig.
.213	3	88	.887

Based on the table 6 above, the results of the homogeneity test show that the significance value for the conceptual understanding learning outcomes for self-regulated learning strategies and teacher regulated learning is greater than 0.05 ( $0.887 > 0.05$ ). This means that the data has a homogeneous variance matrix.

### *Research Hypotheses Testing*

There are three hypotheses in this research:

1) Ho-1: there is no difference in the results of learning conceptual understanding in learning theory subjects between students taught with self-regulated learning strategy and students taught with teacher regulated learning strategy.

Ha-1: there is a difference in the results of learning conceptual understanding in learning theory subjects between students taught with self-regulated learning strategy and students taught by teacher regulated learning strategy.

2) Ho-2: there is no difference in learning outcomes in the application of the concept of learning theory between students taught by self-regulated learning strategy and students taught by teacher regulated learning strategy.

Ha-2: there are differences in learning outcomes in the application of the concept of learning theory between students taught by self-regulated learning strategy and students taught by teacher regulated learning strategy.

3) Ho-3: there is no interaction between learning strategies and self efficacy on the learning outcomes of conceptual understanding on learning theory subjects.

Ha-3: there is no interaction between learning strategies with self efficacy on the learning outcomes of conceptual understanding on learning theory subjects.

To test the hypothesis above, the following is the presentation of the results of ANOVA analysis in the form of a test of Between-Subjects Effect in the table below:

**Table 7.** *The Results of the Analysis of Two-Tailed ANOVA Test of Between - Subject Effects*

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	2379.652 <sup>a</sup>	3	793.217	31.396	.000
Intercept	483285.043	1	483285.043	19128.773	.000
STRATEGI	292.348	1	292.348	11.571	.001
SELF_EFFICACY	2066.261	1	2066.261	81.784	.000
STRATEGI * SELF_EFFICACY	301.043	1	301.043	13.833	.003
Error	2223.304	88	25.265		
Total	487888.000	92			
Corrected Total	4602.957	91			

The results of the first hypothesis test based on the two-tailed ANOVA test in Table 7 above show that for the learning strategy, the calculated F value is 11,571 and the significance value is 0.01. The significance value is smaller than 0.05 ( $0.01 < 0.05$ ). Thus, the null hypothesis is rejected, this means that there is a significant difference in the learning outcomes of conceptual understanding between groups taught with self-regulated learning strategy and groups taught by teacher regulated learning based learning strategy.

The results of the second hypothesis test based on the two-tailed ANOVA test in Table 7 above show that the calculated F value is 81.784, and the significance value is 0.00. The significance value is smaller than 0.05 ( $0.00 < 0.05$ ). Thus, the null hypothesis is rejected. This means that there is a significant difference in the results of conceptual understanding between groups that have high self efficacy with groups that have low self efficacy. This shows that students who have high self efficacy have better learning outcomes on conceptual understanding than the group of students who have low self efficacy.

The third hypothesis is that there is an interaction between learning strategies and self efficacy on the learning outcomes of conceptual understanding. The results of the Two-tailed ANOVA test in Table 7 above show that the calculated F value is 13.833, and the significance value is 0.03. The significance value is smaller than 0.05 ( $0.03 < 0.05$ ). Thus, the null hypothesis is rejected. This means that there is an interaction between learning strategies and self efficacy towards the learning outcomes of conceptual understanding of Learning Theory.

## DISCUSSION

Based on the results of hypothesis testing, the first hypothesis in this study is: there are differences in learning outcomes of conceptual understanding between students using self-regulated learning strategy and students who use teacher regulated learning based learning are accepted. This means that groups of students who use self-regulated learning strategy obtain higher conceptual understanding learning outcomes compared to groups of students who use teacher regulated learning strategy.

The results of this study support the results of the study of Najva Najabati (2015) which states that the self-regulated learning strategy influences reading comprehension, as expressed by Zhu, Au & Yates (2016), which states that self-regulated Learning Strategy can help students determine the steps to learn and can improve learning outcomes if the steps are applied effectively.

This is also supported by the research of Siti Fatimah (2013) which states that self-regulated learning strategy improves learning achievement. This study found that in the application of self-regulated learning strategy, students use the ability of Metacognition (Flavel 1976) so that they can make stages to help them learn. These stages include; The first one is Forethought, Planning and Activation or the planning stage, the second stage is monitoring (controlling) monitoring or supervision, and the third stage is Reaction and reflection, or the evaluation stage. According to Pintrich (1999), this behavior is a regulatory strategy that can help students plan their learning and evaluate it so that it can improve learning achievement.

The results of the second hypothesis test show that there is a significant difference between learning outcomes of the conceptual understanding in the group with high self efficacy and groups that have low self efficacy. The results of this study are

supported by Bandura that students with high self efficacy will get good results whereas students with low self efficacy will get less learning outcomes.

Students with high self-efficacy, have a high level of self-confidence in their abilities, so that that belief encourages them to learn, and to search for sources of information to complete the task given. While with low self efficacy, the belief in the ability possessed is relatively small, so they are not sure that they are able to get better learning outcomes. The results of this study support the results of Angela Willson-Conrad and Megan Grunert Kowalske's research (2017), which states that students with high self efficacy have high academic achievement, and vice versa, students with low self efficacy have low performance. This is in line with the statement that individuals with low self efficacy will have negative thoughts and consider tasks as a threat, so that they set low goals for themselves (Aid Sunarya & Wan Ali, 2009), other studies show that self efficacy can improve learning outcomes ( Mohamad Yusuf, 2011, Shahrzad Elahi Motlagh, et, al, 1015, Maimunah Ismail.et.al, 2005, Tamara & Koufteros, 2002).

The results of the third hypothesis test show that there is an interaction between learning strategies and self-efficacy. The results of this study are supported by Sharon Zumbunn (2011), who supports that self-regulated learning through self-efficacy can produce higher performance and academic achievement. The research conducted by OslemSadi, MirayUyar (2013) also states that self-regulated learning strategy and self efficacy can improve academic achievement.

## CONCLUSION

Based on the results of the research and discussion above, it can be concluded that: 1) self-regulated learning strategy provides a positive influence on the conceptual learning outcomes of understanding the subject of learning theory. Thus, it can be concluded that there are significant differences in the results of conceptual understanding. This means that self-regulated learning strategy has a positive influence on the results of conceptual understanding in the Learning Theory course, when compared to teacher regulated learning strategy. 2). High self efficacy provides a positive influence on the learning outcomes of conceptual understanding of Learning Theory, and 3) there is an interaction between learning strategies and self efficacy on learning outcomes. Based on the results of the research and discussion above, it can also be concluded that the self-regulated learning strategy and high self efficacy capabilities are very effective. Therefore, this strategy is very appropriate to be applied in the learning process in an effort to improve the learning outcomes of conceptual understanding by paying attention to the students' self-efficacy abilities.

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