The Moderating Effect of Learning Independence On the Effect of Reciprocal Teaching Method On Students' Critical Thinking Skill (Experimental Study on Economic Subject of Class X IPS SMA N 1 Sumber - Cirebon Regency).

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Abstract. The ability to think critically is very important for students because one's ability to be able to succeed in his life is determined by, among others, his thinking skills, especially in the effort to solve life's problems that he faces. The purpose of this study is to test the theory of CTL (Constructivist Theories of Learning) by analyzing the first, The Effect of Reciprocal Teaching learning methods and Discussion methods on students' critical thinking skills. Second, the effect of learning independence on students' critical thinking skills. Third, the effect of the interaction between the Reciprocal Teaching Method and learning independence on students' Critical Thinking Skill. The method used in this study is an experimental method with a comparative approach. The design used is factorial. The subject of the research were all students of class X IPS3 and X IPS4 SMA Negeri 1 Sumber, as many as 72 students. The instrument used are consisted of tests of critical thinking skills and a learning independence questionnaire. Data was analyzed with the test of two-way ANOVA. Based on the analysis results obtained: (1) The learning methods affect students' critical thinking skills, with sig. value $0.008 < 0.050$, (2) Learning independence has a significant effect on students' critical thinking skills, with sig value $0,000 < 0.050$, (3) There was no interaction effect between the learning methods and learning independence on students' critical thinking skill, with sig value $0.432 > 0.050$. Based on the results of the study it can be concluded that: (1) learning with the reciprocal teaching method is more effective in improving students' critical thinking skills compared to the discussion method, (2) There are differences in the influence of high, medium and low learning independence in influencing the critical thinking skills of students in the experimental class and control class, the value of students' critical thinking skills with high levels of learning independence is more effective when compared to students with moderate and low levels of learning independence, (3) the moderator variable is not strengthening and weakening the independent variable, meaning that Reciprocal teaching learning methods and learning independence both play an important role and provide a major contribution in supporting the development of students' critical thinking skills

Keywords: Reciprocal Teaching Method; Learning Independence; Critical Thinking Skill

1 Introduction

In education, critical thinking is a competency to be achieved as well as a tool needed to construct knowledge. The ability to think critically makes it easier for students to achieve the goals and functions of education, and for students to more easily achieve the goals they want to achieve. From the results of pre-research at SMA N 1 Sumber Kab. Cirebon, by providing a test of economic material, it was found that the average value of critical thinking skills in class X IPS was still low, this was evidenced by the results obtained by the researchers as follows:

Table 1. Pre-Research Results

Number of Students	Lowest Score	Highest Score	Mean
34	20	80	47,65

There are several factors that cause students' low critical thinking skills. From the description of the problem above, we need an appropriate approach to learning. The low ability of students to think critically in understanding learning material is due to students lack of mastery of the concept of learning, teachers do not emphasize understanding of students and students only accept explanations from the teacher. Such learning activities cause students to tend to only rote learning or memorize and without understanding or without understanding what the teacher teaches. This kind of learning makes students passive and less involved in learning which can lead to saturation and lack of understanding of concepts so that students are less motivated to learn and result in low learning outcomes of students.

To overcome these problems, we need a learning method that is more interesting and makes students active in learning. So that the flow of the learning process is not only from the teacher but students can teach each other. One of the learning strategies in improving students' critical thinking skills is the reciprocal teaching method developed by Brown & Palin scar (1982) which is a learning strategy through peer teaching activities. In this strategy, students act as "teachers" replacing the teacher's role to teach their friends. Reverse learning is primarily developed to help teachers use collaborative learning dialogues to teach reading comprehension independently in the classroom. From the background of the problem, the problems to be examined in this study are:
a. Does the use of the Reciprocal Teaching learning method and the Discussion method affect the critical thinking skills of students?
b. Does independent learning affect the critical thinking skills of students?
c. Is there an influence of the interaction between the reciprocal teaching method and independent learning on students' critical thinking abilities?

The purpose of this study was to test the CTL (Constructivist Theories of Learning) theory by analyzing:
a. The influence of the reciprocal teaching learning method and the discussion method on the critical thinking skills of students.
b. The influence of independent learning on students' critical thinking skills.
c. The Effect of the Interaction between the Reciprocal Teaching Method and the Independence of Learning on the Critical Thinking Ability of students.

2 Method

This research was conducted at SMA N 1 Sumber Kab. Cirebon. The target subjects of this study were two classes, namely class X IPS3 and class X IPS4 with a total of 72 students and each class of 36 students. The method used in this research is an experimental method with a comparative approach. Comparative research is a study used to find the effect of certain treatments on others under controlled conditions, other variables that can affect the experimental process can be tightly controlled (Sugiyono, 2013: 107). The problem raised in this study is the critical thinking ability of students. To overcome this problem, an action was taken in the form of using a reverse teaching approach (reciprocal teaching) to improve students' critical thinking skills in economic subjects.

The experimental research design used in this study was a factorial design. According to Sugiyono (2012: 76) factorial design is a modification of the true experimental design (truly pure experiments), that is, by paying attention to the possibility of variables affecting treatment (independent variables) on the results (dependent variable). The research design is described as follows:

Table 2. Research design

(Factor B) Independence	Learning Methods (Factor A)	
	Reciprocal Teaching (A1)	Discussion (A2)
High	Critical thinking skills (Y)	Critical thinking skills (Y)
Moderate		
Low		

Some of the data collection techniques used to obtain data in this study were observation, learning independence questionnaire using a closed Likert scale in the form of a checklist (√). Sugiyono (2011, p. 134) explains that, "The Likert scale is a scale used to measure the attitudes, opinions and perceptions of a person or group of people about social phenomena", the critical thinking ability test using pretest and posttest in retrieving data in the field. This test is used to measure the effectiveness of the reciprocal teaching learning method and the discussion method on the critical thinking skills of students. The test is in the form of essays (Mahanal, Zubaidah, Bahri, Dinnurriya, 2016), students' answers were scored using the critical thinking skills rubric developed by Zubaidah, Corebima, and Mistianah (2015). This test will be in the form of an essay with a total of 10 questions. Researchers in the preparation of items and lattice items adjust to existing basic competencies. In the assessment of this test, a score of 0-5 is used.

The results of the validity showed that the instrument used by researchers was valid, with a correlation of Sig. 0.05 obtained r table> 0.229. Both for the pretest instrument, critical thinking skills and independence questionnaires. Reliability results showed that the pretest instrument used was reliable with a Cronbach's Alpha value of 0.702> 0.60, meaning that 9 questions were valid & reliable out of a total of 10 questions, while the independent learning questionnaire showed reliable results with a Cronbach's Alpha value of 0.910> 0.60 meaning 20 questions. valid & reliable from a total of 20 questions.

For the difficulty level of the experimental group and the control class, the results of the difficulty level of questions that were considered "very difficult" were 1 item with a percentage of 10%, "difficult" as many as 5 items with a percentage of 50%, and "moderate" as many as 4 items with a percentage of 40%. While the results obtained from the test of the difference between the experimental class and the control class show that for the criteria

"Enough" there are 7 items with a percentage of 70%, "bad" there are 2 items with a percentage of 20%, and "very bad" there is 1 item with a percentage of 10%.

3 Result and Discussion

An overview of the pretest results was given to two groups of research samples, namely the experimental group and the control group before being given treatment or treatment, while the posttest was given after being given treatment or treatment. Based on data processing from the pretest results of the experimental group and the control group, the following data were obtained:

a. Pretest results for the Experiment class, Mean Value of 26, Std. Deviation 8, minimum value 14, and maximum value 48
b. Pretest Results Control class, Mean Value of 25, Std. Deviation 10, Minimum Value 12, Maximum Value 52. This means that there is no difference in students' initial abilities between the experimental class and the control class.

Based on the data processing of the post-test results from the experimental group and the control group, the following data were obtained:

a. Posttest results for the Experiment class, Mean Value of 54, Std. Deviation 12, minimum value 36, and maximum value 78
b. Pretest Results Control class, Mean Value of 39, Std. Deviation 11, Minimum Value 12, Maximum Value 66.

This means that there is a difference in the final ability of students between the experimental class and the control class.

The description of the results of independent learning in the experimental class with a low category, there were 9 students or 25%, 14 students or 38.9% learning independence in the medium category and 13 students or 36.1%. Whereas in the control class learning independence with the low category there were 10 students or 27.8%, the learning independence with the medium category was 24 students or 66.7% and the learning independence with the high category there were 2 students or 5.6%. The normality test is used to determine whether the population is normally distributed or not. In this study, the normality test was carried out to determine whether the data in the pretest, posttest, difference (gain) in the experimental class and control class came from data that was normally distributed or not. The test criteria are to compare the sig value. ($\alpha = 0.05$) where if the value is sig. > 0.05 then the data is declared to be normally distributed, whereas if the value is sig. <0.05, the data is declared abnormal.

Table 3. Tests of Normality

	Class	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Pretest	Experiment	0.167	36	0.013	0.944	36	0.066
	Control	0.107	36	.200[*]	0.933	36	0.03
Posttest	Experiment	0.138	36	0.082	0.95	36	0.103
	Control	0.089	36	.200[*]	0.981	36	0.763
N Gain	Experiment	0.094	36	.200[*]	0.978	36	0.692
	Control	0.118	36	.200[*]	0.936	36	0.039

In connection with the pretest data normality assumption and N gain has not been fulfilled, then the nonparametric test is carried out, namely the Friedman Test with the results obtained of $0.862 > 0.05$, so the data is normally distributed. Whereas for the posttest the normality assumption is met, a two-way ANOVA test can be performed. The next analysis was carried out with the homogeneity test to determine the variance population, which had the same or different variances. The homogeneity test was carried out by the Levene test, the results showed the level of significance or the probability value was above 0.05. Because the probability > 0.05, the data is homogeneous.

Table 4. Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Pretest	1.769	1	70	.188
Posttest	2.044	1	70	.157
N Gain	.466	1	70	.497

Hypothesis testing with two-way ANOVA analysis obtained the following results:

Table 5. Descriptive Statistics

Dependent Variable: KBK

Method	Independence	Mean	Std. Deviation	N
Reciprocal Teaching Method	Low	45.7778	10.46157	9
	Moderate	49.1429	7.43026	14
	High	64.9231	8.62614	13
	Total	54.0000	11.92357	36
Discussion Methods	Low	40.4000	6.58618	10
	Moderate	37.0833	11.06470	24
	High	58.0000	11.31371	2
	Total	39.1667	10.90609	36
Total	Low	42.9474	8.82845	19
	Moderate	41.5263	11.41298	38
	High	64.0000	8.88015	15
	Total	46.5833	13.58308	72

Table 6. Tests of Between-Subjects Effects

Dependent Variable: KBK

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	7279.074[a]	5	1455.815	16.508	.000	.556
Intercept	96787.499	1	96787.499	1097.510	.000	.943
Method	658.538	1	658.538	7.467	.008	.102
Independence	2071.896	2	1035.948	11.747	.000	.263
Method * Independence	149.807	2	74.904	.849	.432	.025

Error	5820.426	66	88.188
Total	169340.000	72	
Corrected Total	13099.500	71	

a. R Squared = .556 (Adjusted R Squared = .522)
The criteria for rejection and acceptance of the hypothesis:
a. Ha is accepted or Ho is rejected if ρ value <α = 0.05
b. Ha is rejected or Ho is accepted if ρ value> α = 0.05

3.2 Hypothesis 1

Referring to table 4:13 of the results of hypothesis testing through Tests of Between-Subjects Effects on the method line, the calculated f value is 7, 467 and the sig value. equal to 0.008 <0.050, thus Ha is accepted and Ho is rejected. This means that the learning method affects the critical thinking ability of students. The amount of influence is stated by the partial square eta of 0.102, which means that the effect of the learning method is 10.2% on students' critical thinking abilities. Based on the results of the research above, it can be analyzed that the reciprocal teaching and discussion learning methods produce different influences on students' critical thinking skills.

3.3 Hypothesis 2

In the independence line, the calculated f value is 11.747 and the sig value. equal to 0.000 <0.050 then Ha is accepted and Ho is rejected. This means that independent learning affects the critical thinking ability of students. The magnitude of the influence is stated by the partial square eta of 0.263. This means that the effect of independence is 26.3% on the critical thinking ability of students. Based on the research results above, it can be analyzed that learning independence has a significant effect on students' critical thinking skills. The results of the analysis show that the high, medium and low mean (mean) values of learning independence have different effects on students' critical thinking abilities in the experimental class and the control class.

3.4 Hypothesis 3

In the line of the method * independence, the calculated f value is 0.849 and the sig value. amounting to 0.432> 0.050 then Ha is rejected and Ho is accepted. This means that there is no interaction effect between learning methods and learning independence on students' critical thinking abilities. The amount of influence is stated by the partial square eta of 0.025. That is, the interaction between learning methods and independence is 2.5% of students' critical thinking skills.

Based on the results of the above research states that Ha is rejected with a sig value. ρ> 0.05 so the post hoc test was not carried out. The ANOVA test results show that there is no interaction between learning methods and independent learning. Independent learning as a moderator variable does not strengthen and weaken the reciprocal teaching method as an independent variable. This can be explained from the magnitude of the influence of the learning method with independent learning on the learning ability of students which is 0. 556.This means that the variability of students' critical thinking skills in economic subjects is 55.6%, with a sig value of 0.432> 0.05 so it can be concluded that no There is the influence of the interaction given between the learning method and the independent learning together on the improvement of students' critical thinking skills.

4 Conclusion

a. Learning using the reciprocal teaching method is more effective in increasing the critical.
b. There are differences in the influence of high, medium and low learning independence in influencing the critical thinking skills of students both in the experimental class using the reciprocal teaching method and the control class using the discussion method. This can be seen from the mean value of independent learning in the experimental class which is higher than the mean value of learning independence in the control class. The value of critical thinking skills of students with a high level of learning independence is more effective when compared to students with moderate and low levels of learning independence.
c. Independent learning as a moderator variable does not strengthen and weaken the reciprocal teaching method as an independent variable, so it can be said that both reciprocal teaching learning methods and independent learning play an important role and contribute greatly in supporting the development of students' critical thinking skills.

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