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Students' Critical Thinking Skill through Group Investigation Learning Method at SMK West Java

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ABSTRACT

This research is motivated by the low critical thinking skill of students. From the results of school observations at SMKN 1 Bandung, there are still students who have low critical thinking skill in the subject of Civil Service Automation, especially for class XI OTKP who choose the subject of Automation of Personnel Governance as a vocational subject. The purpose of this study is to determine whether the use of the Group Investigation method affects the level of critical thinking skill in students, whether the initial ability affects the level of critical thinking in students, whether there is an interaction effect of the Group Investigation method and the initial skill of students' critical thinking skill. The method used in this research is Quasi Experimental with Non Equivalent Control Group Design. The purposive sampling technique was used in the sample selection, namely Class XI OTKP 3 as the experimental class totaling 34 people and class XI OTKP 4 as the control class totaling 33 people. The results of the post-test analysis showed that the data on students' critical thinking scores. Distributed normally and homogeneously so that one way ANNOVA Parametric Inferential statistical test was carried out. The results of the hypothesis test showed that the learning method variable obtained F value = 11.101 and p = 0.002 <0.05, meaning that the first hypothesis test was accepted, that there were differences in students' critical thinking skill using the Group Investigation method with the lecture method. Based on the N-Gain critical thinking skill, it can be concluded that there are differences in the critical thinking skill of students before and after using the Group Investigation method in the experimental class with a high categorized increase. It can be concluded that the Group Investigation learning method has an effect on improving students' critical thinking.

Keywords: *Critical Thinking Skill, Group Investigation, SMK West Java*

INTRODUCTION

In the 21st century the world of science is increasingly interconnected, so that the synergy between them is getting faster. Today, education is in the knowledge age with an extraordinary increase in knowledge. The acceleration of increasing knowledge is supported by the application of digital media and technology Trilling dan Hood dalam (Wijaya, Sudjimat, & Nyoto, 2016, hlm. 264). The importance of critical thinking in education is supported in decades of theoretical and practical studies (Miguel & L´opez, 2016, hlm. 2). The inclusion of critical thinking in the school curriculum has been widely reported since the mid-20th century. Critical thinking has been described as the foundation of education across academic devices (Samson & Samson, 2016, hlm. 147). Learning materials must provide a more authentic design for going through challenges in which students can collaborate to create solutions to solve lesson problems. Problem solving leads to questions and searches for answers by students who can then find solutions to problems in the context of learning using available information resources.

One of the efforts to change in solving problems in order to enter the 21st

century which is full of global competition and the increasingly rapid development of science and technology and information. Learning content is expected to be able to meet 21st century skills; 1) Learning and innovation skills include mastery of diverse knowledge and skills, learning and innovation, critical thinking and problem solving, communication and collaboration, and creativity and innovation, 2) Digital literacy skills include information literacy, media literacy, and ICT literacy, 3) Career and life skills include flexibility (Ericka Darmawan & Susilo, Herawati, 2016)and adaptability, initiative, social and cultural interactions, productivity and accountability, and leadership and responsibility Trilling in (Wijaya et al., 2016, hlm. 267).

SMKN 1 Bandung is one of the schools that has implemented the 2013 curriculum, but its implementation in the classroom is still limited. The Civil Service Automation subjects taught in class XI OTKP. The results of observations show that the critical thinking skills of students majoring in OTKP in the Civil Service Automation subject are still lacking, this could be because teachers have not fully used learning methods that are in accordance with the 2013 curriculum, one of which is the Group Investigation method. Several research results have shown that the Group Investigation method affects students' critical thinking skills. The purpose of this study is to measure whether there is a significant influence on critical thinking of students who are taught using the Group Investigation method with those taught using conventional methods.

LITERATURE REVIEW

Critical thinking skill is meant as mental processes which include the ability to interpret, analyze, evaluate, make conclusions, communicate and self-regulate. Requires logical reasoning thinking and analytical skills and demonstrates higher order thinking. Zane in (Ericka Darmawan & Susilo, Herawati, 2016, P. 49). Develop HOT in taxonomy. Teachers must engage students with learning tasks that exceed second-level understanding to encourage application, analysis, synthesis and evaluation activities in processing information (Zohar in Yen & Halili, 2015, p. 41).

Critical thinking is basically a set of skills to be acquired such as reasoning skills and rules for making conclusions or generalizations. However, the importance of dispositions that must be fostered such as critical attitude, intellectual honesty, impartial consideration from various points of view, and moral orientation such as concern for a human and just world. Critical thinking is a problem of logic because it concerns the quality of reasoning and arguments, problems strengthen skills, processes, or abilities such as identifying assumptions, clarifying ideas, assessing credibility, and evaluating judgments. For a critical thinker, it is important to have certain habit characteristics such as respect for people, readiness to consider alternative explanations, pay attention to investigative procedures, and readiness to listen to others Moon (in Mok and Yuen, 2016, p. 31).

Critical thinking is an intellectual disciplinary process from the activeness and skills of conceptualizing, analyzing, synthesizing and / or evaluating information from which it is formed. From this opinion it can be explained that critical thinking is a concept of thinking systematically and deeply related to a topic as a guide for analyzing a problem according to Scriven and Paul in (Amalia Ulfah, Hasan Mahfud, 2018, p. 25). This high-order thinking ability provides an opportunity to consider existing knowledge or situations to correct mistakes and resolve deficits to achieve the right situation (Yazar Soyadı, 2015, p. 12). Indicators for measuring critical thinking skills according to Thurman (in Yazar Soyadı, 2015, p. 12) are as follows: 1. Reasoning and guesswork, 2. Reasoning and guessing, 3. Seeing situations from various perspectives and dimensions, 4. To be open to change and innovation, 5. To see

thoughts without prejudice, 6. Be open, 7. Think analytically, 8 Attention to detail.

The cooperative learning model, namely the Group Investigation (GI) method, originates from the time of John Dewey. This method was first developed by Thelan and then expanded and refined by Yael Sharan from Tel Aviv University. Group Investigation (GI) is a learning method that involves students from planning, both in determining topics and how to study them through investigation (Seswira Yunita, 2018, p. 13).

Group investigation is an alternative to cooperative learning methods that can improve critical thinking skills and train students to work cooperatively in groups or both (Mahanal et al, 2018, p. 16). Group investigation is one of several learning methods involved in cooperative learning. This method involves students in planning topics to be studied and how to carry out their investigations (Chusni et al, 2018, p. 2)

Group investigations ask students to ask questions about a topic and together with their peers seek answers to these questions and shape their findings into meaningful constructs. First small groups of students plan what they will learn and how they will learn, and thus largely determine the content of their questions. As the investigation progresses, students share responsibility for various aspects of the investigation, combining individuals, learning in pairs and groups. When they complete their group members investigation, integrate and summarize their findings and present them to their classmates (Sharan, 2015, p. 88).

METHOD

The method used in this research is quasi-experimental (Quasi Experimental) with a pretest-posttest design using the Non Equivalent Control Group. This research was conducted by applying learning using Group Investigation in the experimental group and lecture method in the control group. Learning activities are carried out five times in each class which begins with giving a pretest at the beginning of the first meeting and posttest at the end of the fifth meeting. This research was conducted in January - February 2020 at SMK Negeri 1 Bandung. The population in this study were students of class XI OTKP 3 and XI OTKP 4 which consisted of 67 students. The sample in this study were two classes consisting of class XI OTKP 3 (experimental group) and class X OTKP 4 (control group), each of which totaled 34 and 33 students. Sampling in this study was carried out using purposive sampling technique (Sugiyono, 2012: 68)

RESULT AND DISCUSSION

The results of the data analysis of this study consisted of the analysis of normality and homogeneity using the SPSS version 23 computer software application with the steps to test for normality and homogeneity of data:

Normality Test Result

The result of the posttest data normality test for high-order thinking skills of students in the experimental and control classes can be seen in the table below:

Table 1.1: Results of Normality Test for Students' Critical Thinking Skill Experiment Class and Control Class
One-Sample Kolmogorov-Smirnov Test

		EKSPERIMEN	KONTROL
N		**34**	**33**
Normal Parameters[a,b]	Mean	81.3235	71.9157
	Std. Deviation	6.88750	9.51604
Most Extreme Differences	Absolute	.203	.226
	Positive	.150	.118
	Negative	-.203	-.226
Test Statistic		.203	.224
Asymp. Sig. (2-tailed)		.822	.276
a. Test distribution is Normal.			
b. Calculated from data.			

Source: Data Processing SPSS One Sample Kolmogorov Smirnov Test

Table 1.1 above shows the significance probability value of the experimental class normality test and the control class must be above 0.05 or> 0.05. Based on the results of the posttest data trial for the experimental and control classes, it was found that the two classes had a higher count value than the table value, which was above 0.05, meaning that the two classes in this study came from a normally distributed population.

Homogeneity Test Result

The result of the posttest data homogeneity test of the experimental and control class on students' critical thinking skill can be seen in the table below.

Table 1.2: Homogeneity Test Results of Experiment and Control Classes Test of Homogeneity of Variances

Test of Homogeneity of Variances			
Critical Thinking Skill			
Levene Statistic	df1	df2	Sig.
1.195	1	67	.280

Source: Levene SPSS Homogeneity Test Results

Table 1.2 above shows the probability value of the significance of the homogeneity of the experimental and control classes must be above 0.05. Overall research obtained from the results of the posttest homogeneity test in the experimental and control classes is above 0.05, which is equal to 0.280, which means that the data on the critical thinking skill of the experimental class and control class have homogeneous variance between groups.

N Gain Result

After knowing the result of the normality test and homogeneity test, the next step is to measure the effectivity of the effect of using the Group Investigation method in the experimental class. Based on the results of the calculation of the pretest and posttest scores, the average gain value for understanding the concept of the experimental class is tabulated in table 1.3.

Table 1.3: N-Gain Critical Thinking Skill Experiment Class Group Investigation Learning Method

Data	Rata-rata Skor	Peningkatan	N-Gain	Indeks N-Gain	Interpretasi
Pretest	31.445	50.882	0.728	G > 0,70	High
Post test	80.320			G 0,30 < g < 0,70	Average
				G ≤ 0,30	Low

Source: Processed data

Table 1.3 provides information that there is an increase in students' critical thinking skill before and after using the Group Investigation method in the experimental class of 0.728. When compared with the gain index g <0.70, the increase in understanding of the concept is categorized as high. Based on the N-Gain critical thinking ability of the experiment, it can be concluded that there are differences in the critical thinking skills of students before and after using the Group Investigation method in the experimental class with a high categorized increase.

Furthermore, the results of the variable hypothesis test of the learning method obtained F value = 11.101 and p = 0.002 <0.05, meaning that for the first hypothesis test it is accepted that there are differences in students' critical thinking skills using the Group Investigation method with the lecture method.

CONCLUSION

This study proves the effect of the Group Investigation learning method and the lecture method can improve critical thinking skill in the subject of Civil Service Automation. Based on the results of the first hypothesis test which has been analyzed and tested, it was found that F = 11.101 and p = 0.002 <0.05 means that for the first hypothesis test it is accepted, that there are differences in the critical thinking abilities of students who use the Group Investigation method with the lecture method on the (OTKK) subject matter. Civil Service Automation. From the increase in critical thinking skills, there was a higher increase in the experimental class compared to the

control class who used the discussion method.

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