

**The Effect of Inquiry Learning on Critical Thinking Ability of Junior High School Students in Social Science Subject****Agung Stiawan<sup>1)</sup>\***

1) Postgraduate of Social Studies Education, Universitas Negeri Surabaya, Indonesia

**Abstrak**

Penelitian ini bertujuan untuk mengetahui pengaruh model pembelajaran inkuiri terhadap keterampilan berpikir kritis siswa di sekolah menengah pertama dalam mata pelajaran IPS pada tema dinamika populasi dan pembangunan nasional. Metode yang digunakan adalah metode kuasi eksperimen dengan desain kelompok kontrol pretest-posttest. Model pembelajaran yang diterapkan pada kelompok eksperimen adalah model inkuiri, sedangkan kelompok kontrol adalah *Problem Based Learning*. Subjek penelitian adalah siswa kelas VIII A (percobaan) dan VIII B (kontrol) di SMP Negeri Kota Probolinggo tahun akademik 2018/2019. Data dikumpulkan dengan menggunakan teknik observasi, dan kemudian dianalisis secara statistik menggunakan t-Test pada program SPSS. Hasil pada data posttest menunjukkan signifikansi (dan didukung oleh analisis deskriptif di mana skor rata-rata posttest dari kelompok eksperimen lebih tinggi daripada kelompok kontrol).

**Kata kunci:** pembelajaran inkuiri, berpikir kritis, pendidikan IPS

**Abstract**

*This study aims to determine the effect of the inquiry learning model on the critical thinking skills of junior high school students in social studies subjects the theme of the dynamics of population and national development. The method used was Quasi Experimental method with the Pretest-posttest control group design. The learning model applied to the experimental group was the inquiry model, while the control group was the Problem Base Learning. Subjects were students of class VIII A (experiment) and VIII B (control) at State Junior High School of Probolinggo City academic year of 2018/2019. Data were collected using observation technique, and then analyzed statistically using t-Test on the SPSS program. The results on the posttest data demonstrated a significance (and were supported by the descriptive analysis in which the posttest mean score of the experimental group was higher than the control group).*

**Keywords:** inquiry learning, critical thinking, social sciences

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\*Corresponding author:

E-mail: [agungtrenggalek@gmail.com](mailto:agungtrenggalek@gmail.com)

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## **INTRODUCTION**

As a country with a high population, Indonesia is faced with various problems, one of which is the low participation rate of school-age children. Quoted from Surabaya Pos, October 2, 2018 edition, the participation rate of school-age children nationally has only reached 53 percent even though compulsory 9-year basic education has been announced by the government. In addition, other problems such as employment, where 77% of the workforce is still under-educated. The impact on per capita income will in turn affect the quality of life. One effort to overcome these problems is to improve the education system. The Indonesian government has been striving to improve the quality of education of the population through various programs in the field of education, such as scholarship programs, school operational assistance (BOS), compulsory education programs, etc. (Usman, 2018).

The goal of national education must follow the conceptual foundation of the educational philosophy, which is to prepare the younger generation to succeed in facing the challenges of the times (Kesuma et al, 2013). Krulik and Rudnick (Quoted from Fachrurazi, 2011) group thinking skills into four levels, namely: 1) memorization (recall thinking), 2) basic (basic thinking), 3) critical (critical thinking), 4) creative (creative thinking) Furthermore, King (1997) classifies the four levels of thinking into two thinking abilities, namely basic thinking skills and high-level thinking skills. The ability to think basic is only limited to routine things and is mechanical, for example memorizing and repeating information that has been obtained. While high-level thinking skills include problem solving skills, decision making, critical thinking and creative thinking.

One of the high-level thinking skills is the ability to think critically. Critical thinking ability is very important for students to be able to deal with the changing times so quickly (Slavin, 2011). Critical thinking is an attitude to think deeply about problems and things that are within the reach of one's experience, knowledge of examination methods and logical reasoning and a skill to apply these methods. Critical thinking involves mental activities in problem solving, decision making, assumptions analysis (analyzing assumption) and scientific inquiry (scientific inquiry) (Astika et al., 2013). To train students' critical thinking skills, the right learning method is needed, such as the inquiry learning model. Inquiry learning model is one of the learning models that are considered relevant for developing students' critical thinking skills. Inquiry learning describes an educational approach in which students gain knowledge or skills through their activeness in contextual learning rather than receiving instruction from the teacher (Byrne, 2017).

In formal education, learning Social Sciences (IPS) is one of the subjects that has existed since the elementary school level. However, the provision of social studies materials has tended to be more oriented towards one-way communication patterns, namely from teachers to students. Conventional learning based on verbal description models that are widely developed by social studies teachers are considered still not successful in realizing social studies learning that is meaningful to the lives of students. So, most students are unable to connect between material and their application in social life. This is what causes Social Studies Learning has many criticisms from various circles (Suprijono, 2009). The results of preliminary observation conducted at State Junior High School (SMPN 5) of Probolinggo City showed that social studies teachers had not been able to make students active and could master the concepts independently. Students are not able to build their understanding and just wait for information from the teacher without trying to find it themselves. The low student activity results in a low critical thinking ability. Students tend to be passive, preferring to listen to the

teacher's explanation and record social studies material that is very laden with memorization.

Weak mastery of concepts causes the lack of developing critical thinking skills in students. This lack of critical thinking skills can be seen from low student activeness, where some students just keep quiet and listen to the material without being able to give questions or do logical reasoning. Learning tends to be one-way only to do transfer of knowledge. This is shown from the results of observations in answering practice questions, students give answers incorrectly, tend to express answers that are less logical, and deliver unsystematic answers. In fact, not infrequently some answers do not match the problems raised. In addition, students are less active in asking questions and expressing opinions so that the teacher must force students to answer with the pointing system. Based on those phenomenon, this study was conducted to determine the effect of the inquiry learning model on the critical thinking skills of Junior High School students in social studies subjects the theme of Dynamics of Population and National Development.

## **METHOD**

This study used the Quasi Experimental method that was meant to overcome the difficulties in determining the control group. Furthermore, the research design applied was the Pretest-posttest control group design. In this design, researchers used two groups, namely the experimental group and the control group. The experimental group received social studies learning using inquiry model, while the control group received Problem Base Learning. Both groups will be observed in terms of the critical thinking skills before treatment (pretest) and after treatment (posttest). The population in this study were 200 eighth grade students of the State Junior School (SMPN 5) of Probolinggo City, academic year of 2018/2019. Samples were students of class VIII A (experimental group) and class VIII B (control group).

SMPN 5 Probolinggo was chosen as the research site because it has implemented the 2013 Curriculum since 2015 and has adequate facilities. Data collection was done by observation technique using learning outcomes tests. In its implementation, the research instruments include the student observation sheet, the Statement form for the Implementation of the Learning Implementation Plan, and the written test sheet. Data were analyzed statistically by using t-Test on the SPSS program, with the prerequisite tests of Normality and Homogeneity. Decision making on hypothesis testing used a significance level of 0.05 (5%).

## **RESULT AND DISCUSSION**

### **Descriptive analysis**

The result of descriptive data analysis on the pretest and posttest result of experimental and control group is displayed in Figure 1. The material used as an experimental medium was social studies, the topic of "Dynamics of Population and National Development".

Figure 1 shows that the experimental and control classes have pretest values that are not too much different. The mean values of the experimental and control pretest classes were 46.9 and 43.7, respectively. After being treated with different learning models, the mean score (posttest) rose to 66, 9 in the experimental class and 58.3 in the control class, respectively. The low value of the pretest in the two groups showed that students did not fully have knowledge of the material to be studied. Students are

able to work on several questions but the answer is wrong.

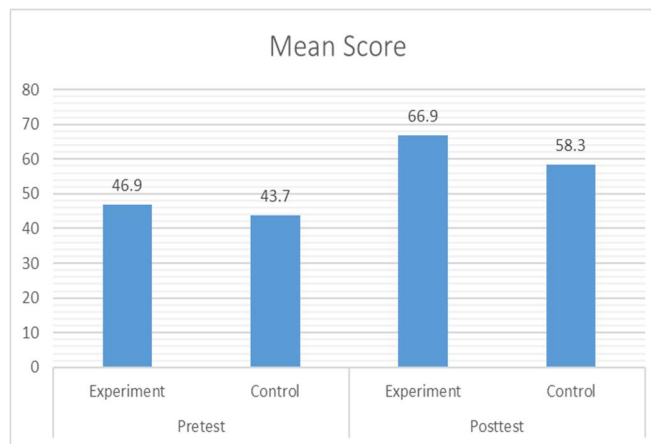


Figure 1. Mean comparison of pretest and posttest of the experimental and control groups

This is different from the posttest results which indicate that students have obtained material from the teacher.

The results show that both classes have an increase in the posttest mean value. However, specifically the number of increases in the average posttest value of the experimental and control groups is different, where the experimental class has a higher mean value than the control class. These findings indicate that the method provided is able to provide a better effect on improving students' critical thinking skills. In more depth, these findings need to be proven again by t-test so that the significance can be known.

### T-TEST

Data analysis with t-test was conducted to determine differences in students' critical thinking skills in the two research groups. Before discussing the results of the t-Test, the results of the normality test data are presented in table 1.

Table 1. The result of Normality test

Kolmogorov-smirnov	Pretest		Posttest	
	Control	Experiment	Control	Experiment
Statistic	0.172	0.162	0.172	0.175
Sig	0.091	0.138	0.091	0.076
Interpretation	Normal	Normal	Normal	Normal

Calculation of the Normality test was carried out by the Kolmogorov-smirnov method. Overall, it can be seen that the pretest and posttest data of the two groups have a significance value greater than 0.05. So, it can be stated that all data has a normal distribution. The assumption test was followed by the Homogeneity test (Table 2) which was carried out by the Levelene statistical method.

Table 2. The result of Homogeneity test

	Pretest	Posttest
Levelene statistic	0.07	0.99
Df1	1	1
Df2	42	42
Sig.	0.79	0.32
Interpretation	Homogen	Homogen

The result of homogeneity test shows that pretest and posttest data have a significance value greater than 0.05. So, it can be stated that all data have a homogeneous variety. The two prerequisite test results have shown that the research data has a homogeneous normal distribution and variety, so that it can be continued with the t-test. the overall t-test results are shown in table 3.

Table 3. The result of t-Test

	Pretest	Posttest
t	-1,028	-2,523
df	42	42
Sig.(2 tailed)	0,310	0,016
Mean difference	-3,18	-8,59

Based on the results of the t-test, the results of the posttest between the experimental and control groups did not differ significantly ( $p$ - value  $0.310 > \alpha$  0.05). This shows that students in the experimental class and the control group had the same critical thinking skills at the time of the pretest. Furthermore, research is carried out by applying inquiry learning models, there are experimental groups and problem based learning learning models in the control group. The result, there was a significant difference in critical thinking skills between the experimental and control groups ( $p$ -value  $0.016 < \alpha$  0.05). The experimental group had a higher posttest average (66.9) than the control group (58.3), thus indicating that the Inquiry learning model proved to be more effective in improving students' critical thinking skills than the problem based learning method. In other words, the research hypothesis is accepted.

### N-gain Test

The results of the N-gain test on the achievement of the pretest and posttest scores of students' critical thinking skills are shown in table 4.

Table 4. The result of N-gain test

Group	Mean pretest	Mean posttest	N-gain	Interpretation
Experiment	46.9	66.9	0.38	Moderate
Control	43.7	58.3	0.26	Low

Based on the results of the N-gain test, it can be seen that students in the experimental

class have an N-gain value of 0.38 and are included in the "moderate" category, while the students in the control class have an N-gain value of 0.26 and fall into the "low" category. Thus, it can be affirmed that the use of Inquiry learning models has a better influence and effectiveness than cooperative class discussion models. Students in the experimental group are better able to solve problems in discussions related to the material Population Dynamics and National Development.

## **Discussion**

In general, it can be seen that Inquiry learning models more effectively improve students' critical thinking abilities than cooperative class discussion models. This is indicated by the existence of significant differences in the results of the t-test data posttest ( $p\text{-value } 0.016 < \alpha 0.05$ ). The results of this study are in line with previous studies conducted by Putri Nur Mashita et al. (2016), where learning by applying the Inquiry model is able to improve students' critical thinking skills. Learners more easily solve problems in discussions by providing various alternative answers, so that learning outcomes become maximal and able to achieve mastery learning.

The difference in the test results of critical thinking skills among experimental class students was caused by differences in the characteristics and application of the inquiry method and cooperative discussion methods. The Inquiry learning model is designed to foster the students' critical thinking through systematic stages, including stages of orientation, identifying, taking position, exploring the sentence patterns of argument, refining, until testing factual assumptions. So, students are motivated to explore their own experiences and analysis related to population problems that occur in Indonesia.

Inquiry learning model is a strategy for problem solving in learning and requires "mental scaffolding" to develop the potential of each student (Alkusaeri, 2013). In its implementation, the learning process is carried out by dividing students into small groups. According to Vygotsky's theory of scaffolding, the stages in learning begin with the assistance provided in stages. At the beginning of learning, students get a lot of help later, but in the subsequent learning the amount of assistance decreases until eventually students are not given assistance and are required to think independently. The assistance in question is instructions, warnings, encouragement, as well as explanations in describing the problem. These assistance can be obtained from teachers, parents, and peers. This is intended to develop the level of development of students.

Inquiry learning has important steps that must be done systematically. The Exploring stage of the sentence patterns of argument is the stage of determination from the previous stages. If this stage is done well, students will be able to evaluate the advantages and disadvantages of an implementation, and determine the solution to a problem. However, not all students have the same critical thinking skills. The results of the study show that some students have low scores. This is possible because there are certain stages that are not passed carefully, such as the implementation stage. At the stage of implementation, students are required to have broad insight and high creativity. If students have narrow insights and low creativity, constraints will affect the development of critical thinking skills.

The stages of inquiry learning model is important for adjusting the problems of discussions with the learning materials. Problems discussed will stimulate students to think critically and find solutions. Students are required to find as many solutions as possible from a problem then make a decision about the most appropriate solution to be applied. This certainly requires students to think critically and have learning

experiences that will be very useful in real life. If students are active in finding information, concepts, and generalizations, the findings will always be remembered and understood by students because they come from their own thoughts. The decision making is carried out jointly by involving group members.

On the other hand, students certainly cannot follow the methods or steps that already exist automatically. So that steps and stages of completion are needed systematically and directed. The teacher as a facilitator is required to be able to guide students and be able to create a conducive learning atmosphere for students so that the learning process can run successfully. In addition, teachers are also required to be able to accommodate various ongoing dialogues with students. Thus, the application of Inquiry learning models will effectively improve students' thinking abilities.

## **CONCLUSION**

Based on the results, it can be concluded that there is a significant difference in critical thinking skill between students who learn with inquiry learning models and students who learn with cooperative discussion learning models. This is due to the systematic steps of problem solving in Inquiry learning model. By learning using Inquiry method, students are not only motivated to think critically, but also to dare to propose logical arguments and defend opinions.

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