

IMPLEMENTATION OF OPEN INQUIRY AND GUIDED INQUIRY  
LEARNING MODELS TOWARD THE JUNIOR HIGH SCHOOL STUDENTS  
COLLABORATIVE ATTITUDE

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**Abstract**

The aim of this study is to find out enhancement difference of collaborative attitude of students using Open Inquiry learning model and Guided Inquiry in Temperature and Alteration theme. Sample of study are 56 students grade VII students of Junior High School in Palembang City. This study use quasi experiment method. Data collection technique is by attitude scale. Data analysis technique use IBM SPSS Statistics 22 program. The result of study analysis show that collaborative attitude in Open Inquiry class is 84.5% with good category and in Guided Inquiry class is 85.0% with good category. Based on result of difference test, it can be concluded that there is no difference in collaborative attitude of students who use Open Inquiry learning model and Guided Inquiry learning model.

Keywords: Open Inquiry, Guided Inquiry, Collaborative Attitude, Temperature and Alteration.

## INTRODUCTION

Science learning is not enough with explanations and listening alone, but students will more easily understand the material and concepts of science if done with the activities of finding the concept itself. This is in line with the opinion of Trianto (2014), that the teaching and learning process of IPA is more emphasized on process skill approach, so that students can find facts, construct their own concepts, theories and scientific attitudes that can ultimately have a positive effect on the quality of educational products.

Ministry of Education and Culture (2014), the purpose of science subjects in junior high school is that students have the following abilities: (1) Increasing belief in the greatness of God Almighty based on the existence, beauty and order of the nature of his creation, (2) Developing an understanding of the various natural phenomena, concepts and principles of Science that are useful and applicable in everyday life, (3) Developing curiosity, positive attitude, and awareness of the interplay between science, environment, technology, and (5) Increasing awareness to participate in maintaining, and preserving the environment and natural resources, (6) Increasing awareness to respect nature and All its order as one of God's creation, and (7) Increase knowledge,

concept, Science skills as a basis for continuing education to the next level.

Science education is directed to inquiry and doing so it can help students to gain a deeper understanding of the natural world. When associated with actual learning conditions, the discovery process is rarely done by the teacher. For that, in an effort to improve the quality of learning, teachers need to provide opportunities for students to make observations, ask questions, file allegations, collect data, and conclude on their own. Through the cycle of such discovery process, students' knowledge and experience are expected to be understood as knowledge and experience from, by, and for them (Hosnan, 2014).

Inquiry learning model is one learning innovation that can lead students to make the discovery so that students can incarnate more deep knowledge. The learning model emphasizes how one can cooperate in information processing. Inkuiri applied in the learning process can improve students' ability in making observations and raising answers to a problem through data interpretation to obtain a conclusion. Adapted from Hosnan (2014) and Sanjaya (2008), the steps of inquiry learning model are: orientation, formulating problems, formulating

hypotheses, collecting data, testing hypotheses and formulating conclusions Zion & Sadeh (2011), states that Open Inquiry is the most complex level, in this learning model the teacher only explains the knowledge framework, but the students who formulate the question. In Open Inquiry students investigate topics related to the questions that have been formulated. Open Inquiry requires students to think high and key level in Open Inquiry learning is the ability of teachers to motivate students to ask questions that will guide students to solve problems. Before entering into the model of learning Open Inquiry students are trained first way to berinkuri through the model of inquiry training. This model of inquiry training is an implementation of teaching techniques so that students are aroused by problems and actively seek and examine their own problem solving (Martina, 2014). Inquiry training (in the early stages) is most important in order to generate student learning motivation and guide students to formulated problems.

According to Sund and Trowbridge (1973, in Wenning, 2011), suggests that guided inquiry is an inquiry model in which teachers provide sufficient guidance / instruction for students. Planning is made by teachers and students do not formulate problems. In guided inquiry learning, the teacher

does not release the students just in the activities during the lesson. In this research will be analyzed the difference of attitude can be cooperated by junior high school students in integrated science learning on temperature theme and change after using applied learning model. Attitudes can work together is one indicator of a scientific attitude (Carin & Sund, 1997). The theme of temperature and change is chosen because it has concepts that can be applied in everyday life. In addition to this inquiry learning method used is experimental method.

The Temperature and Change theme is considered suitable for use given the many concepts that can be explained through experimental activities. Through these experimental activities are also expected to develop attitudes to cooperate students. This study uses an integrated learning model of Webbed model. The integration of the Webbed model is chosen because this model examines the concept of science more broadly (Fogarty, 1991). In research the concept of IPA on the theme of temperature and change will be studied alignment based on the field of biology, physics, chemistry and technology.

Based on the above description, the researcher needs to do research on the implementation of Open Inquiry and

Guided Inquiry learning model on the attitude to cooperate students of class VII in SMP Negeri 1 Palembang.

## METHOD

This study was sampled by Cluster Random Sampling technique. The sample in the research taken two classes that is class VII.4 and class VII.1. Grouped as an Open Inquiry class and Guided Inquiry class with each class of 28 students, so that the total number of students involved in this research is 56 students.

The method used in this research is quasi-experiment method. The research design used is Matching Only Posttest Control Group Design (Fraenkel & Wallen, 2009). Attitudes can cooperate students is one indicator of the scientific attitude in this study measured by using the attitude scale. This attitude scale is given to the students at the final meeting after learning using the Open Inquiry and Guided Inquiry learning models on the Temperature and Change theme. Learning stages in both models are orientation, formulate problems, formulate hypotheses, collect data, test hypotheses and formulate conclusions. The attitude statement developed in accordance with the attitude indicator can cooperate with the choice of answers for each statement is strongly agree (SS), agree (S), disagree (TS) and

strongly disagree (STS). Prior to the use of each statement on the scale of attitudes tested the different strengths, validity and reliability to obtain a good statement. In Table 1 we can see the score of attitude scores adapted from Riduwan (2013).

Table 1. Guidance Score for Attitude Score

| Positive Statement  | Score | Negative Statement      | Score |
|---------------------|-------|-------------------------|-------|
| Strongly Agree (SS) | 4     | Strongly Disagree (STS) | 1     |
| Agree (S)           | 3     | Disagree (TS)           | 3     |
| Disagree (TS)       | 2     | Very Disagree (STS)     | 4     |
| Very Disagree (STS) | 1     |                         |       |

Each statement on the attitude scale is analyzed based on the attitude scale scorecard. To avoid a statement with a score of 0 the researcher ensures the student answers all scientific attitude statements.

The attitude rating category adapted from Purwanto (1994) can be seen in Table 2.

Table 2. Category Assessment of Attitudes

| Category  | Value      |
|-----------|------------|
| Excellent | 86% - 100% |
| Good      | 76% - 85%  |
| Quite     | 66% - 75%  |
| Less      | 56% - 65%  |
| Very less | ≤ 55%      |

Hypothesis testing (different test) for students' scientific attitude using Suryani

SPSS-22 program with non-parametric statistic, because the data type on scientific attitude is ordinal data. Non-parametric statistics used are Mann-Whitney test. Statistical hypothesis in this research are:

H0:  $\mu_1 = \mu_2$

That is, there is no significant difference in attitudes to cooperate students using the Open Inquiry learning model with students using Guided Inquiry learning model on Temperature and Change theme.

H1:  $\mu_1 \neq \mu_2$

That is, there is a significant difference in attitude to cooperate students who use Open Inquiry learning model with students using Guided Inquiry learning model on Temperature and Change theme.

## **RESULTS AND DISCUSSION**

This study was used Open Inquiry learning model for experiment class one and Guided Inquiry instruction model for experiment class two on science subjects theme of Temperature and Change. In the Open Inquiry and Guided Inquiry learning model there are six learning steps: orientation, formulating problems, formulating hypotheses, collecting data, testing hypotheses and formulating conclusions (Hosnan, 2014). However, for the Open Inquiry learning model in the early learning step there is a difference with the Guided Inquiry

learning model, where for the Open Inquiry learning model begins with Training Inquiry. Training Inquiry is used at the beginning of the learner so that students can be directed to do Open Inquiry, because in this learning model students are required to work together in groups ranging from formulating problems, formulating hypotheses, then determining the equipment to be used, assemble, and collect data.

Bruce & Weil (1980, in Hosnan, 2014) mentioned that inquiry training can add to science knowledge, generate creative thinking skills, skills in acquiring and analyzing data. In line with the opinion of Joyce et al. (2009) that the instructional impact of inquiry practice is to establish a creative spirit, independence in learning, respect for differences of views and aware that knowledge is tentative. This inquiry will direct the students to organize information through question and answer done with the teacher related to the phenomenon presented. Questions students ask teachers may only have questions that have yes or no answers. Students should not ask questions whose answers are descriptive.

The findings in the field showed that the questions asked by the students were questions about the tools, materials and workings of the experiments. Furthermore, will discuss how

differences in attitude can work together junior high school students after using the model of Open Inquiry and Guided Inquiry in the theme of temperature and change. This discussion is based on the results of the analysis that has been done and based on the findings that existed during the learning process.

Analysis of a scientific attitude statement on attitude indicators can work together at the end of the lesson after using the Open Inquiry learning model for the experimental class one and Guided Inquiry for the second experimental class using an attitude-scoring answer score. The average recapitulation of attitude grade classes can work with students can be seen in Table 3.

Table 3. Recapitulation of Average Values of Collaborative Attitudes Students

| Class        | N  | Value (%) | Category |
|--------------|----|-----------|----------|
| Experiment 1 | 28 | 84,5      | Good     |
| Experiment 2 | 28 | 85,0      | Good     |

Student's scientific attitude data on experimental class one using Open Inquiry model and student in experiment class two using Guided Inquiry model on Temperature and Change theme then tested hypothesis. To test the hypothesis, final scientific attitudes were used in both classes analyzed by using non-parametric statistics ie Mann-Whitney

test. Hypothesis test results are presented in Table 4.

Table 4. Hypothesis Test Results

| Class  | Ave-<br>rage | Sig.<br>(2-tailed) | Conclu-<br>sion                             |
|--------|--------------|--------------------|---|
| Exp. 1 | 84,5         | 0,25               | There is<br>no<br>significant<br>difference |
| Exp. 2 | 85,0         |                    |   |

Based on Table 4 it is known that sig.hitung attitudes can cooperate students of  $0.25 > \alpha (0.05)$ , so that on the hypothesis test  $H_0$  accepted and  $H_1$  rejected. It states that there is no significant difference in attitudes to cooperate students using Open Inquiry learning models with students using Guided Inquiry learning models on Temperature and Change themes.

Attitude is a form of feeling reaction support or not support on a particular object (Azwar, 2013). In relation to students' scientific attitude, the feeling that arises will be related to scientific action. Many factors affect one's attitude, one of which attitude can cooperate. Azwar (2013) states that several factors that are very influential in the formation of this attitude include personal experience, others that are considered important, emotional factors in themselves, and culture in the environment. To be consistent, attitudes must persist in the individual for a long time.

Based on the result of the students' scientific attitude analysis on the indicators can work together, shows a large percentage of results with the category of scientific attitude both in both classes. Obtained the value of scientific attitude in the experiment class of 84.5% and the second experimental class of 85.0%. The large percentage of scientific attitudes for this indicator is suspected because students in both classes do the learning in groups, this requires students to actively cooperate with members of the group. Students should work together so that the experimental activities to test the hypothesis go well and the results obtained in accordance with the theory. This is in line with the opinion of Hosnan (2014) which states that one of the principles of inquiry learning is interaction praction, both the interaction between learners and learners with teachers / lecturers, even learners with learning environment and it is able to make learners experience the development of attitude Especially the scientific attitude.

Researchers deliberately selected several experiments on the Temperature and Change theme that can not be done alone with the aim that students can work with members of the group, for example in experiments changes due to temperature expansion.

This is supported by the results of research from Rakhmawan (2015), that students who do practicum directly will be more active in asking and discussing than students who do the demonstration. Students should work together to assemble tools to prove the existence of incidents of expansion of solid, liquid and gas objects. In addition, the questions presented also make students can work with members of the group.

Both of the learning models used are almost the same type, only the treatment of teachers to different students. Both of these instructional models direct students to gain hands-on learning experience and students are required to work in groups.

In students who use Open Inquiry learning model that begins inquiry practice, students are required to perform their own learning steps. Students are required to think actively about questions such as what they should ask teachers to obtain data and information that will lead them to the next learning step. This situation will also require good cooperation from each member of the group. Students work with members of their group in determining problem formulation, hypothesis formulation, collecting data, testing hypotheses and drawing conclusions. This is because students do not get guidance from the teacher, so it

is necessary for the cooperation so that learning goes well.

In students using Guided Inquiry model is very different from students who use Open Inquiry learning model. Here the students get guidance from the teacher to do the learning step, as if given a recipe book and the students just follow the guidelines that already exist. However, group collaboration is also needed in the learning of this model. Stages in inquiry model learning requires students to be able to work together so that in the final stages students can formulate conclusions well and correctly.

Suggestion of improvement in the next research is good for students who use Open Inquiry learning model is not released in the course of doing the learning step, the teacher should give more guidance to the students especially during the experiment, because for this class the students look not accustomed to experiment without Guidance from the teacher. In students using Guided Inquiry model it is better to experiment and make the conclusion that students are not fully given guidance by the teacher so that students can put their ideas into perspective. In the experimental activities, the students are adequately guided by the worksheet student (LKS) alone, so that the students' attitude can develop maximally

and in the formulation of the conclusion of the students should do it independently so that students can think actively in describing the findings and more show the attitude can bekerjasana with other students.

## **CONCLUSION**

Based on the results of the analysis and discussion that has been done, it can be concluded that there is no significant difference in collaborative attitude students who use Open Inquiry learning model with students using Guided Inquiry learning model on the theme of temperature and change. Obtained in the classroom using Open Inquiry learning model, the collaborative attitude score for 84.5% students with good category and in the class using Guided Inquiry model of students' scientific attitude value of 85.0% with good category.

## **SUGGESTION**

Based on the results of the two models of learning can be presented to students in junior high school, but it is advisable to pay attention to the length of time research in order to obtain the collaborative attitude students optimally. Collaborative attitudes students have not developed maximally, this is because the learning time is too short so that students' scientific attitude can not develop properly.

Unaccustomed students follow the model of learning applied to cause confusion of students in implementing the learning steps. In addition students are also not used to doing experiments in the laboratory, thus making students confused with the tools used in the experiment. It is better for further learning students are accustomed to learn by using the model of learning and experimental methods in the laboratory for the learning process is not monotonous.

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