



THE EFFECT OF GUIDED INQUIRY LEARNING MODEL AND SCIENTIFIC PERFORMANCE ON STUDENT LEARNING OUTCOMES

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ABSTRACT

The purpose of research (1) Investigate the effect of guided Inquiry learning toward student learning result (2) Investigate the effect scientific performance to the student learning result (3) Investigate the interaction the guided Inquiry model and learning scientific performance toward the student learning result in sistem Excretion material. The research subjek were 60 student of XI IPA 1 and 2 of SMAN 10 Pandeglang. Taken by simple random sampling. The data were analyzed by two tailed ANOVA test. Before the hypothesis was tested, normality and homogeneity test were done, the method that used in this research is quasi experiment with 2 x 2 factorial design. Based on the analyzed data, the highest score of the student learning result in experiment and control group were 90 and 85 with the means were 82 and 72. It can be concluded that: (1) there is significant influence of guided Inquiry learning the student learning result (2) there is significant influence of scientific performance to the student learning result (3) there is an interaction between guided Inquiry learning model and scientific performance toward the student learning result in Excretion system material. Based on the conclusions, it is suggested that the teacher's ability is encouraged to dig deeper the student's potential and performance.

Keywords: learning outcome, Guided Inquiry, level of Scientific performance

INTRODUCTION

Biology is one of the branches in learning that prioritizes process and product skills. Word process here means the process through scientific activities, that is: critical thinking of problems, so that learners can feel a problem, develop hypotheses or questions, design experiments or make observations to answer questions and draw conclusions. During this time the process skills have been emphasized in various science curriculum, but the achievement is not measured well or less emphasized in evaluation at local and national level (Rustaman, 2010).

Achievement of learning outcomes related to lab work is still neglected, both in written and non-performance. A teacher acts as a very important center for change in its role in providing science for students to

achieve their learning goals (Ozdem et al, 2010).

Biology as a subject that demands the process of scientific activity, it requires skill assessment to measure students' ability to do something as the cognitive translation they have received in class. The process through scientific activities, namely: critical thinking to the problem, so that learners can feel the existence of problems, develop hypotheses or questions, design experiments or make observations to answer questions and draw conclusions. Products in Science are concepts, basis, principles, theories and laws. Therefore, students should be given an opportunity to interact directly with learning object, observing, developing questions, connecting facts with sources of knowledge, drawing conclusions and

communicating alternatives for improvement (Rustaman, 2005).

In science learning, students should be given the opportunity to have inquiry learn to develop skills, knowledge and attitudes whether the class is conducted inside or outside classroom. Implementation of the guided Inquiry learning model is suitable for development in Biology (Bialangi et al., 2016; Ristanto, 2011). Teaching and Learning activities using guided inquiry model emphasize the learner to gain knowledge by applying steps of scientific method process, ie formulating problem, proposing hypothesis, collecting data, verification results, and generalization by drawing conclusions. In inquiry process, teacher's role as a mentor in decision-making process (Matthew & Keneth, 2013; Obomanu et al., 2014, Oghenevwede, 2010). In this process, students and teachers work together to formulate problems and develop answers. In addition, students are also active in inquiry process that are very long in finding a concept and material (kubicek, 2005).

Guided inquiry learning model provides an opportunity for students to learn how to find facts, concepts and principles through their experience directly. Thus, students will not only learn by reading and memorizing the subject, but also get the opportunity to practice developing their thinking skills and being scientific, and it is possible to have construction process of knowledge well, so that students will be able to improve their understanding on material that being studied (Ibrahim, 2010). Guided inquiry is one type of inquiry that focuses on planning and guidance that begin from teacher to improve students' skill for life (Kulthau, 2007). This is consistent with the statement stated by Opara and Oguzor (2011), that in inquiry learning, the role of teacher only as students' facilitator to find their own ideas for them to learn and develop, a very deep science. In guided inquiry learning problems are raised by mentors or teachers that involve skill process and scientific activity, in order to produce behavioral

changes or learning outcomes. Through guided inquiry, teacher must monitor class' ideas and when students develop their ideas (Minstrell and Kraus, 2005).

A learning model is needed to develop the skills and abilities to be creative in accordance with the basic tasks that exist using scientifically based knowledge, especially in real-life. daily, and ability to solve problems then make scientific and responsible conclusions (Holbrook & Rannikmae, 2009).

Based on the study about characteristics of guided inquiry learning model is an appropriate learning model for biology lessons in school. From the beginning of learning students are required to be able to find a concept through direct activities, this investigation process is expected to improve students' scientific performance.

Activity according to Pradianti research (2015) students use guided inquiry model to trained students' scientific performance, This research aims to find out the influence of guided inquiry and scientific performance on biology learning outcomes. The hypothesis used in the research is that there is influence of guided inquiry and scientific performance on student learning outcomes in the material of excretion system. The study design used quasi experiment with experimental design-research-test learning outcomes. Independent variables in this study are guided inquiry learning model and investigative group learning model, while the dependent variable is the scientific performance.

METHOD

The method used in this research is quasi experiment. In this study, independent variables are guided inquiry learning model and scientific performance. While the dependent variable is the result of learning with 2 x 2 factorial design.

This research was conducted in SMA Negeri 10 Pandeglang Pandeglang Regency, Banten Province, in 2nd semester

in the academic year of 2016/2017. Subjects in this study were students of class XI IPA 1 and XI IPA 2 SMAN 10 Pandeglang. Sampling technique that used was simple random sampling using Mc Clave formula.

The test instrument of multiple choice learning result with the number of questions 25 questions that have been validated and tested. And scientific performance is captured through student worksheets (LKS) and observation sheets used by teachers.

Preparatory stage, the researcher prepares the proposal, develops the learning tool of RPP, determines the experimental class and the control class of the research. Application of learning model in this research is divided into experimental class with guided inquiry learning model and control class implemented by investigative group learning model. Developing a research instrument is a multiple-choice test with five answer options and a scientific performance LKS. Instruments that have been made are validated and tested. Furthermore, the validity and reliabelitas of the instrument to produce a valid instrument and reliable. With validity value 0.3440 and reliability 0,872.

Data were analyzed using descriptive statistics. Prior to the data analysis is done, first test data normality and homogeneity. Normality test using kolmogorov-smirnov test, while homogeneity test using Bartlett test. The results of the kolmogorov smirnov test and the barttlet test state that the data are normally distributed and homogeneous. Furthermore, the data were analyzed by two-lane anava test. The test was performed using statistical analysis of SPSS 20 program for Windows, with a significance level of 0.5%.

Table 1. Turkey test Result

No	Hipotesis Statistik	Q_{hitung}	Q_{tabel} $\alpha=5\%$	Q_{tabel} $\alpha=1\%$
1	Ho : $\mu A1B1 = \mu A1 B2$ H1 : $\mu A1B1 \neq \mu A1 B2$	5,53	2,95	
2	Ho : $\mu A1B1 = \mu A2B1$ H1 : $\mu A1B1 \neq \mu A2B1$	4,80		
3	Ho : $\mu A2B1 = \mu A2B2$ H1 : $\mu A2B1 \neq \mu A2B2$	8,08		
4	Ho : $\mu A1B2 = \mu A2B2$ H1 : $\mu A1B2 \neq \mu A2B2$	7,35		

Based on turkey test result in table 2, it can be seen that $Q_{hitung} > Q_{tabel}$, it means that there is significant differences between

learning model and students' scientific activity.

RESULT AND DISCUSSION

The description analisis data consist of: mean, median, modus, varians, and standart deviation. Analyze data processing description using SPSS 20 program. Summary of the description data results analysis as in in the table below

The First Hypothesis

The results of the first hypothesis testing reject H_0 , then receive H_1 . This is proved by the average learning excretion system of students who use Guided Inquiry method is higher than students who use the investigation group method. Based on test result in table Anava, obtained value of $F = 51,361$ and value of $sig = 0,00$ for inquiry model of guided inquiry of $sig < 0,05$ hence there is very significant difference to result of learning material of excretion system with guided inquiry learning model and cooperative learning model investigation group. So the researcher concluded that Guided Inquiry method gave a significant influence on student learning outcomes. Guided inquiry method requires students to be more active, able to seek and explore various information beyond the teacher's submission and make a new and complete concept of knowledge. The results showed that the implementation of learning using guided inquiry model is more effective to improve students' scientific performance. This is in line with the research undertaken by Özdilek and Bulunuz (2009) stated that learning with guided inquiry is more effective in science learning. Also in line with the research The use of guided inquiry learning model can give the students understanding of nature and give an explanation of what they learn (Rakhmawan et al, 2015) according to Fitriani (2016) the result of learning guided inquiry learning model is better than learning result using model group investigation. These results attest to some related research outcomes, which are related to research between

guided inquiry learning models and proven investigative groups.

The second hypothesis

The result of the second hypothesis testing rejects H_0 , then receives H_1 . This is proved by the average learning outcomes of excretion system in students who had high scientific performance was better than students who had low performance. Based on test result in table Anava, obtained value of $F = 57,471$ and value of $\text{sig} = 0,000$ for inquiry model of guided inquiry $\text{sig} < 0.05$ hence there was significant difference to result of student learning with high scientific performance with result of student learning with low scientific performance. Activity interact directly

Learning resources through an inquiry process can strengthen students' scientific performance (khasnabis, 2008, soepudin, 2014). Obtained value conclusion the level of scientific performance gives a significant influence on student learning outcomes

The third hypothesis,

The result of testing the third hypothesis rejects H_0 , then receives H_1 . This was proved by the average score of excretion system learning outcomes in high scientific students using guided Inquiry method is better than using group investigation method Based on the test results in the table Anava, obtained the value of $F = 4.821$ and the value of $\text{sig} = 0.37$ for the guided inquiry learning model is $\text{sig} < 0,05$. So inferred Guided inquiry method and the level of scientific performance of students have a significant influence on student learning outcomes.

CONCLUSION

The conclusion of this research is that the guided inquiry learning model and the scientific performance have an effect on the learning outcomes in the material of excretion system.

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