

## The Effect of Learning Discovery Model on the Learning Outcomes of Natural Science of Junior High School Students Indonesia

Mamik Suendarti<sup>a</sup>

<sup>a</sup>University of Indraprasta PGRI, Jakarta, INDONESIA

### ABSTRACT

The purpose of this study is to determine the effect of discovery learning model on the learning outcomes of Natural Sciences. The research was done by experimental method. The sample of the research is ninth grade students of Junior High School. Data analysis using Analysis of variance (ANOVA). The results showed that there is a significant effect of discovery learning model on the learning outcomes of Natural Sciences. This shows that to improve the learning outcomes of Natural Sciences it is necessary to use discovery learning model.

### KEYWORDS

Learning Model, Discovery, Learning Outcomes, Natural science

### ARTICLE HISTORY

Received 10 October 2017  
Revised 27 November 2017  
Accepted 01 December 2017

### Introduction

Natural Science is also known as science. The word science comes from the Latin word *scientia* meaning "I know". In English, the word science comes from the word science which means "knowledge". In general, science includes natural science, hereinafter known as Natural Science, and social science, hereinafter known as IPS. However, in its development science is often translated as a science of nature.

Iskandar (1996: 17) argues that "Natural Science is a subject that provides opportunities for critical thinking exercises". Conant (Bundu, 2006: 10) also expressed his opinion that science is a building or a series of concepts and conceptual schemes (conceptual schemes) are interconnected as a result of experimentation and observation. The same thing is also put forward by

**CORRESPONDENCE** Mamik Suendarti ✉ Suendarti@gmail.com

© 2017 M. Suendarti.

Open Access terms of the Creative Commons Attribution 4.0 International License apply. The license permits unrestricted use, distribution, and reproduction in any medium, on the condition that users give exact credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if they made any changes. (<http://creativecommons.org/licenses/by/4.0/>)

Wonorahardjo (2010: 11) that "science has a meaning of referring to the knowledge that is within the system of thinking and theoretical concepts within the system, covering all sorts of knowledge, about anything". Learning on Curriculum 2013 uses a scientific approach or a scientific-based approach. The scientific approach is suggested using discovery learning model, project based learning, and problem based learning, each of which has a synergy of learning. The learning model is chosen according to the need so that the result of Natural Sciences learning on the students will be more optimal.

There are several factors that are expected to affect the learning outcomes of Natural Sciences especially students of Junior High School level, such as: the high difficulty level of the material and the teaching model used by the teacher is not optimal so that the teacher as the center, and the students only as a listener, then followed by practice questions. Students are required to memorize many formulas, without proper understanding and understanding so that learning activities become unable to achieve the expected goals because natural science learning is dominated by the transmission or transfer of knowledge from the teacher to the students, this method is known as the conventional learning model. Learning with the conventional teaching model teachers tend to use active learning process control, while students are relatively passive in accepting and following what is presented by the teacher. The role of the teacher is dominant while the student does not play much, for example, the teacher who defines, explains, demonstrates, concludes, generalizes, implements the principles, assigns the task. Students listen to explanations and do the tasks as instructed by the teacher.

To improve the learning outcomes of Natural Sciences, it is necessary to develop a learning model that develops student creativity so as to facilitate students to be active in learning activities. One of the active, student-centered contextual learning models is the discovery learning model.

The discovery learning model is defined as the learning process that occurs when the learner is not presented with the lesson in its final form, but is expected to organize itself. Discovery learning model according to Alma et al (2010: 59) which is also referred to as an inquiry approach starting on a belief in the development of students independently. This model requires Natural Sciences of the active in scientific investigation. This is in line with the opinion that children should play an active role in learning in the classroom as contained in the following Natural Sciences. "Discovery Learning can be defined as the subject matter in the final form, but rather is required to organize it himself" (Lefancois in Emetembun, 1986: 103 in Depdikbud 2014). According to Syah (2004: 244) the steps of the discovery learning model in general teaching and learning activities are as follows: 1) Stimulation, 2) Problem statement, 3) Data collection, 4) Data processing, 5) Verification, 6) Generalization.

## Method

The research approach used in this research is quantitative research with experimental method. This research consists of two classes, the experimental class that uses discovery learning model and control class using conventional learning model. The population is all the characteristics contained in the scope of research, in this case the population is all students of Serang Barat Primary High School in Serang Banten regency of Indonesia. The sample is part of the

population taken as a data source and can represent the entire population (Riduwan, 2015: 27-56). Therefore, samples are required for data retrieval that can describe the actual state of the population. Sampling procedure is done through random sampling technique. Of the nine classes are taken two classes of experimental class and control class. From the random sampling process, the experiment class as many as 24 students who acquired learning through learning discovery learning model. Control group of 24 students were given learning through conventional learning model. Thus the number of students who joined in this study as many as 48 students.

## Results

Analysis of student learning result data was done by using two-way ANOVA which the calculation process was assisted with SPSS 20 program. The result of ANOVA test was then continued with F test to know the significance of difference between each group significantly (simple effect). In other words, the F test is used in order to see which sample groups are higher in the learning outcomes of Natural Science in terms of learning creativity. Summary of data analysis results using ANOVA can be seen in the following table:

**Table 1.** Table Anova.

Tests of Between-Subjects Effects					
Dependent Variable: Hasil Belajar Ilmu Pengetahuan Alam					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	5402.063 <sup>a</sup>	3	1800.688	25.419	.000
Intercept	251286.021	1	251286.021	3547.283	.000
Learning Model	2093.521	1	2093.521	29.553	.000
Error	3116.917	43	70.839		
Total	259805.000	48			

a. R Squared = .634 (Adjusted R Squared = .609)

Based on table 1. above it can be concluded that there is a significant effect of learning discovery learning model on the learning outcomes of Natural Sciences compared with conventional learning model. This is based on test results in Table 1 Test of Between-Subject Effects above which is the main table (main effect) presented the results of hypotheses proposed by researchers. From the table, it is known for the learning model Fcount = 29,553 and sig = 0,000 < 0,050 hence there is significant influence of discovery learning model to the learning result of Natural Science.

## Discussion

Based on the results of the study stated that the provision of learning models has a significant influence on the increase of learning outcomes of Natural Sciences. Or in other words, there are differences in learning outcomes of Natural Sciences that use the discovery learning model by using a

conventional learning model. This can be seen from the average score of learning outcomes of Natural Sciences using discovery learning model of 78.96 while the average score of learning outcomes of Natural Sciences using conventional learning model of 65.75.

Selection of learning models that fit the curriculum and potential goals of students is the basic skills and skills that must be owned by a teacher. This is based on the assumption that the accuracy of teachers in choosing a learning model will affect the success and learning outcomes of students.

Therefore, the presentation of learning materials needs to get teachers' attention, and should in teacher learning select and use approach strategies, models and techniques that involve many students actively in learning, whether mental, physical, or social. One of the learning alternatives that can be used is learning by using discovery learning model.

This discovery learning model essentially explores and develops early knowledge of students actively in the teaching and learning process and it is very good to apply to subjects of Natural Sciences that are often difficult in nature. From this it can be seen that in general the student will be aroused to actively engage in scientific teaching when he sees that the learning situation tends to satisfy himself to explore himself in the discovery of science.

## Conclusion

Based on the results of hypothesis testing of research and analysis of data processing can be summarized as follows: There is a significant influence of learning discovery model of the learning outcomes of Natural Sciences.

## Suggestion

At the end of this study, the teacher should pay attention to the learning model in improving the learning outcomes of natural science.

## Notes on contributors

**Mamik Suendarti** – University of Indraprasta PGRI, Jakarta, Indonesia.

## References

- Alma, Buchari, et al. (2010). *Professional Teachers Mastering Methods and Teaching Skills*. Bandung: Alfabeta Publisher.
- Bundu, Patta. (2006). *Assessment of Process Skills and Scientific Attitudes in Science Learning in Elementary School*. Jakarta: Depdiknas.
- Iskandar, Sрни M. (1996). *Education of Natural Science*. Jakarta. Department of Education and Culture.
- Ministry of Education and Culture. (2014). *Regulation of the Minister of Education and Culture of the Republic of Indonesia number 58 of 2014 on the Curriculum of 2013 Junior High School / Madrasah Tsanawiyah*. Jakarta: Depdiknas
- Muhibbin, Shah. (2004). *Educational Psychology with New Approach*. Bandung: PT Remaja Rosdakarya.
- Riduwan. (2015). *Statistics Basics*, Bandung: Alfabeta
- Wonorahardjo, S. (2010). *Fundamentals of Science (Creating A Conscious Society Science)*. Jakarta: Index.