

The Effect of Inquiry Learning on Science Process Skills of Pre-Service Elementary School Teacher

Prima Mutia Sari¹

¹University of Muhammadiyah Prof. Dr. HAMKA
Jl. Tanah Merdeka, Kp Rambutan, Pasar Rebo, East Jakarta 13830, Indonesia

*Correspondence email: primamutiasari@uhamka.ac.id

ABSTRACT

The aim of the research was to analyze the effect of inquiry learning on science process skill of pre-service elementary school teacher student. The research method was Quasy Experiment with The One Group Pretest-Posttest Design. The research population was all 5th students of pre-service elementary school teacher in one of private universities in Jakarta. The research sample was class 5E, the sampling technique was Cluster Random Sampling. The research instrument was science process skill test. The data analysis using t-test Sample K_S One Sample Kolmogorov Smirnov. The result showed that there was a significant difference of science process skill between pretest and posttest. Therefore, there was an effect of Inquiry Learning on science process skills.

Keywords: Science process skill, inquiry learning, elementary school

INTRODUCTION

Science process skills are the basic skills for understanding science. Science process skills are skills that students use when doing science that is developed through an investigation or problem solving. Science process skills need to be possessed by a preservice elementary school teacher because according to the results of research a teacher who has an understanding in mastering science process skills will be able to apply them in learning [1]. Furthermore, based on the results of research on students of the elementary school teacher education in one of private universities in Jakarta, the results of science process skills of students are still low with an average value of all indicators of 46.46 [2]. One way to improve science process skills is to use the Inquiry Learning.

Inquiry has some variation in the application at the classroom. There are four types of inquiry: 1) Confirmation or Verification (student confirm a concept through an activity, the result has been determine before), 2) Structured Inquiry (student investigate a question which was given by teacher through some procedures which was determined by the teacher), 3) Guided Inquiry (student investigate a question which was given by teacher through some procedures which was determined by student), 4) Open Inquiry (student investigate a topic which was determined by student itself use procedures which was determined by student itself) [3]. In this research, the researchers used guided inquiry. Moreover, a research in elementary school in Turkey revealed that guided inquiry helped to improve level student academic achievement, however, the influence of model for academic achievement was smaller than science process skills. On the other hand, this model could increase science process skills of student [4].

RESEARCH METHOD

The research method was Quasy Experiment with The One Group Pretest-Posttest Design. The research population was all 5th students of pre-service elementary school teacher in one of private universities in Jakarta. The research sample was class 5E, the sampling technique was Cluster Random Sampling. The research instrument was science process skill test. The data analysis using t-test Sample K_S One Sample Kolmogorov Smirnov.

RESULTS AND DISCUSSION

The result showed that there was a difference of science process skill value between pretest and posttest like the picture below.

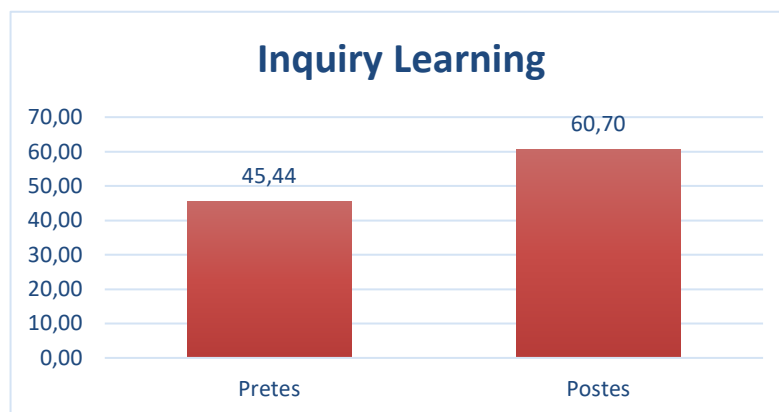


Fig 1. The Average Difference between Pretest and Posttest

Furthermore, the average value of science process skill was tested using t test Sample K_S One Sample Kolmogorov Smirnov. There are prerequisite tests that must be done before the t test, namely the normality test and the homogeneity test. The result of normality tests like table below.

Table 1. Normality Test Result

Kind of Test	Significance Level	Criteria of Significance Level	Conclusion
Pretest	0.198	0.05	Data was distributed normally
Posttest	0.001	0.05	Data was not distributed normally

Furthermore, the result of homogeneity test were shown in table 2 below..

Table 2. Homogeneity Test Result

Kind of Test	Significance Level	Criteria of Significance Level	Conclusion
Homogeneity Test	0.48	0.05	Data was not homogen

Based on the normality and homogeneity result, the statistical test used were a non-parametric test namely t test Sample K_S One Sample Kolmogorov Smirnov like table 3 below.

Table 3. The Result of 1 Sample K_S Test: One Sample Kolmogorov Smirnov

Kind of Test	Significance Level	Criteria of Significance Level	Conclusion
1 Sample K_S Test: One Sample Kolmogorov Smirnov	0.000	0.05	There was a significant difference

Based on the result above, it seemed that there was a significance difference between pretest and posttest of science process skills. Therefore, Inquiry Learning gave an effect for science process skill value. This was suitable with a research about application of Inquiry Based Learning in 5th grade of elementary school student in Turkey, the research revealed that Inquiry Learning gave an influence to science process skill especially on measuring, classification and hypothesizing skill [5]. Moreover, this result also supported with the application of 12 hours inquiry activities in grade 11 student in Thailand that result described that those activities can improve student integrated science process skill [6]. The

Proceeding books:

The 2nd International Conference of Education on Science, Technology, Engineering, and Mathematics (ICE-STEM 2020)

difficulties of this research was lack of the time because some obstacles like flood and many holidays. Then, in the beginning, students looked still confused with what they must done with the activities.

CONCLUSIONS

Based on the research that has been done can be concluded that Inquiry Learning gave an effect to science process skills of preservice elementary school teacher. Based on the conclusions that have been drawn, the researchers gave the following recommendations. First, lecturer should develop learning that can improve the science process skill. Second, student should be introduced to a model before the lecturer use it.

REFERENCES

- [1] J. Ambross, L. Meiring, and S. Blignaut, "The implementation and development of science process skills in the natural sciences : A case study of teachers ' perceptions," no. February 2015, pp. 37–41, 2014.
- [2] P. M. Sari and Zulfadewina, "Profile of Science Process Skill Mastery from Pre-service Elementary School Teacher," *J. Inov. Pendidik. Dasar*, vol. 3, no. 2, pp. 65–72, 2018.
- [3] Randy L. Bell, Lara Smetana, and Ian Binns, "Simplifying Inquiry Instruction," *Sci. Teach.*, vol. 72, pp. 30–33, 2005.
- [4] E. A. Koksall and G. Berberoglu, "The Effect of Guided-Inquiry Instruction on 6th Grade Turkish Students ' Achievement , Science Process Skills , and Attitudes Toward Science," *Int. J. Sci. Educ.*, vol. 36, no. November 2014, pp. 66–78, 2014.
- [5] P. Şimşek and F. Kabapinar, "The effects of inquiry-based learning on elementary students' conceptual understanding of matter, scientific process skills and science attitudes," *Procedia - Soc. Behav. Sci.*, vol. 2, no. 2, pp. 1190–1194, 2010.
- [6] W. Lati, S. Supasorn, and V. Promarak, "Enhancement of Learning Achievement and Integrated Science Process Skills Using Science Inquiry Learning Activities of Chemical Reaction Rates," *Procedia - Soc. Behav. Sci.*, vol. 46, pp. 4471–4475., 2012.