

THE EFFECTIVENESS OF THEMATIC LEARNING TO IMPROVE SCIENCE PROCESS SKILLS OF JUNIOR HIGH SCHOOL STUDENTS

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Abstract

This study aimed to describe the effectiveness of thematic learning to improve science process skills of junior high school students. This article taken from a part of a report of an umbrella research that helps some students complete their thesis. The real class tests of the thematic learning conducted by using one-shot case study approach involved 33 students on the theme water pollution. The learning instructions was developed through 4-D model. Data of science process skills obtained through direct observation of the learning activities. Based on the data observations of two meetings in this group, the thematic learning can improve science process skills of junior high school students. It can be concluded that gain percentage of science process skills are hypothesizing skills by 38.2%, observing skills by 26.8%, experimenting skills by 29.4%, communicating skills by 50.6%, and concluding skills by 46.8%.

Key words: thematic learning, science process skills

INTRODUCTION

The concepts of physics often more delivered by teachers to students as fact rather than as events or symptoms nature that must be observed, measured, and was discussed. As subject matters, physics actually can be used to develop the capacities and abilities of the students both cognitive, motoric, as well as affective aspects. Thus, physics should learn in a manner in such a way as to make it possible to be used in solving the problem with obvious that found students day-to-day. Science skills during the process is yet to be addressed by the majority of teachers so that he could not develop well in the school.

Children need to be trained to develop their problem-solving abilities that truly exists in their surrounding. The mental activities of processes involved among other things include observation, classification, measurement, prediction, description, and inference. Thematic learning can be made as approach to learning science which gives the emphasis on the learning processes which students involvement are mentally and physically well. This approach can be applied in junior high school as a means to develop ability of the students in solving the problem from a very simple to a more complex. Unfortunately, our traditional education system tends to ignore the services.

Thematic approach is a way of teaching and learning, whereby many areas of the curriculum are connected together and integrated within a theme. Thematic approach is based on the idea that people acquire knowledge best when learning in the context of a coherent "whole," and when they can connect what they're learning to the real world. The application of thematic learning approach in relation to a number of factors, namely: the questions, the skeleton questions, the focus questions, and high-level questions that are different. Thematic learning which is designed with good will produce knowledge that can be applied widely. Memorizing facts and information is no longer important skills this time. This Research carried out to describe the effectiveness of thematic learning as the effort to improve science process skills of junior high

school students.

Science process skills is defined as a cognitive process that parsed into the concrete steps to which are then used as a thinking guide. John Dewey's theory about education, says that schools must be a part of the communities in which students learn and develop the capacity of thinking and problem-solving. The characteristics of education according to John Dewey are hands-on learning, functional education, and student centered teaching. The National Association for Research in Science Teaching (NARST) presents that science process skills grouped into two types, namely basic and integrated.

Basic Science Process Skills

Observing, using the senses to gather information about an object or event. Inferring, making an "educated guess" about an object or event based on previously gathered data or information. Measuring, using both standard and nonstandard measures or estimates to describe the dimensions of an object or event. Communicating, using words or graphic symbols to describe an action, object or event. Classifying, grouping or ordering objects or events into categories based on properties or criteria. Predicting, stating the outcome of a future event based on a pattern of evidence.

Integrated Science Process Skills

Controlling variables, being able to identify variables that can affect an experimental outcome, keeping most constant while manipulating only the independent variable. Defining operationally, stating how to measure a variable in an experiment. Formulating hypotheses, stating the expected outcome of an experiment. Interpreting data, organizing data and drawing conclusions from it. Experimenting, being able to conduct an experiment, including asking an appropriate question, stating a hypothesis, identifying and controlling variables, operationally defining those variables, designing a "fair" experiment, conducting the experiment, and interpreting the results of the experiment. Formulating models, creating a mental or physical model of a process or event.

There are some researches report about the positive effect of active learning method on science process skills and academic achievement. Some of them are Elvan Gnce Aka, et al (2010), Chris Keil, et al (2009), and Sema Altun Yalçın, et al (2009). Findings from the study indicate that students develop higher-order process skills through nontraditional laboratory experiences that provided the students with freedom to perform experiments of personal relevance in authentic contexts. Students learned to (a) identify and define pertinent variables, (b) interpret, transform, and analyze data, (c) plan and design an experiment, and (d) formulate hypotheses. Findings of this study suggest that process skills need not be taught separately. Integrated process skills develop gradually and reach a high level of sophistication when experiments are performed in meaningful context.

RESEARCH METHOD

The research method used in this study is one-shot case study approach. The real class tests of the thematic learning conducted involved 33 students by the theme water pollution. The data of science process skills obtained through direct observation of two meetings learning activities. Learning activities carried out by dividing the class into small groups with a membership of about 3-4 students. Observations were made by some observers who carry in hand the observation sheet. Observed science process skills are hypothesizing, observing, experimenting, communicating, and concluding. During the learning activities, students should follow the guidance contained in the student work sheet. The data obtained were analyzed by calculating gain score of the first and the second meetings. In this article, just would be presented data of one school.

RESULT AND DISCUSSION

The data of science process skills obtained through observing two meetings of the learning activities. Science process skills were observed are hypothesizing skills, observing skills, experimenting skills, communicating skills, and concluding skills. The improvement of indicators of the science process skills can be seen from the increase in percentage (%) of those during the two meetings learning activities. Each indicator of the science process skills measured by a rating scale of observation sheet.

The data obtained were analyzed by calculating percentage of gain score of the first and the second meetings are presented in Table 1.

Table 1
Science process skills on the first group.

No.	Indicators	Accessibility		Gain Percentage
		Meeting I	Meeting II	
1	Hypothesizing	2,28	4,19	38,2%
2	Observing	2,75	4,09	26,8%
3	Experimenting	2,34	3,81	29,4%
4	Communicating	1,81	4,34	50,6%
5	Concluding	2,38	4,72	46,8%

According to the table, it is clear that all of the indicators of science process skills of students has increased from the first meeting to the second meeting. The results turned out to be in line with the findings of previous studies as mentioned earlier.

CONCLUSION AND SUGGESTION

The study states that thematic learning can improve some of aspects or indicators of science process skills of junior high school students. Thus, it is evident that the thematic learning effectively to improve the science process skills of junior high school students.

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