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INTEGRATION OF PROJECT BASED LEARNING ETHNOSAINS TENUN IKAT TO IMPROVE UNDERSTANDING OF SCIENCE CONCEPTS AND CREATIVE THINKING STUDENTS JUNIOR HIGH SCHOOL (SMP) TANIMBAR

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ABSTRACT

This study aims to determine increased understanding of the concept of science through the integration of ethnoscience tenun ikat project based learning at SMP tanimbar, improving the ability to think creatively through the integration of the ethnoscience, differences in understanding the concept of science through the integration of project based learning ethnoscience, and differences in the ability to think creatively through the integration of ethnoscience. This research was conducted on April 26 – June 26 2021 located at SMPN 3 Wuarlabobar, SMPN 3 Waturu, SMP Christen Batuputih, SMPN 1 Atap Wermatang. The research design used a quasi-experimental design used two groups, namely the experimental group and the control group. The results of the study show that the integration of project based learning into the learning process can improve understanding of science concepts and ability to think creatively. The conclusion of this study is that there is a significant difference in the value of understanding science concepts and students' creative thinking ability between the sample groups of SMP Negeri 3 Wuarlabobar, SMP Negeri 3 Waturu, SMP Christen Batuputih and SMP 1 Atap Wertmatang.

Keywords: *ethnoscience, tenun ikat, creative, thinking.*

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INTRODUCTION

Utilizing the surrounding environment as a learning resource can make the learning process more real or concrete (Wulandari, 2020). Science which is generally based on educational frameworks and theories that have developed from developed countries, needs to be expanded in scope by tracing and extracting original knowledge from a society (Yasir and Sidik, 2021; Husnul et al., 2021). This is the reason why it is necessary to study and explore specifically the environment as a source of learning. Ethnoscience is an activity that can change the original science of society with science that is scientific (Sumarni, 2018). Ethnoscience integrated learning is a new innovation in the world of education that combines culture with science. The integration of Ethnoscience into long-term learning will affect students' awareness of utilizing science and technology to provide solutions and protect the environment (Mouromadhoni, 2019). Ethnoscience is also a learning that has the ability to plan students' experiences in learning and incorporate cultural elements as a process of transforming original knowledge into scientific knowledge that can be accounted for (Latifah, 2018: Dwi et al. 2021;). Ethnoscience-based learning is contextual learning that is based on a constructivism view by prioritizing meaningful learning. Meaningful learning allows students to learn while doing or "learning by doing". Learning by doing causes students to be able to connect learning material with the context of everyday life. In this case, knowledge is constructed from students' life

experiences. Through the use of the environment as a learning resource, it can provide an understanding that learning resources are not limited. All things that are deliberately designed or that are naturally available and have individual or joint benefits that can help students learn are called learning resources (Fitriyati, 2017). Science learning implemented in this way is able to arouse students' enthusiasm to compile and manifest the correlation between knowledge and reality in the environment, so as to increase scientific literacy, critical thinking skills, scientific generic abilities, creativity, interest and motivation to learn, and students' concern for the environment (Winarti et al, 2018).

One of the local cultures that is still being developed by generations of the Tanimbar Islands is tenun ikat cloth. Woven cloth is a skill for the people of the Tanimbar Islands Regency since their ancestors. On the woven cloth there are many kinds of decorations/motifs that contain ancestral cultural values and identity for the people of the Tanimbar Islands Regency. Weaving for the people of the Tanimbar Islands is a hereditary culture since ancient times. In the traditional way and still using non-machine looms, the women produce weaving with different motifs/flowers. In fact, in the process of making traditional or modern woven fabrics, without them realizing it, the process of making woven fabrics can be one of the local cultures that is still being developed by generations of the Tanimbar Islands, namely woven cloth. Woven cloth is a skill for the people of the Tanimbar Islands Regency since their ancestors. On the woven cloth there are many kinds of decorations/motifs that contain ancestral cultural values and identity for the people of the Tanimbar Islands Regency. Weaving for the people of the Tanimbar Islands is a hereditary culture since ancient times. In the traditional way and still using non-machine looms, the women produce weaving with different motifs/flowers. In fact, in the process of making traditional or modern woven fabrics without them realizing it, the process of making woven fabrics can be studied in relation to other scientific fields, one of which is through an Ethnoscience study based on local wisdom. The stages of making ikat can be related to various scientific disciplines, one of which is the discipline of natural science (Science), as is the case with the subject of heat transfer, physical changes and chemical changes, mixture separation (filtration), additives (natural dyes).

Based on the results of observations, the problem in the field is that science learning has not integrated ethnoscience as a way to preserve local culture which is the original knowledge of the local community. The availability of integrated science learning tools is still minimal and how to integrate ethnoscience in learning can be a significant obstacle because the tools needed to support the achievement of learning competencies are not yet available. Observing several conditions in the field and realizing how important and high the demands are for science teachers, especially junior high school science teachers, as well as various efforts that can be made to improve the quality of science learning. Therefore, it is important to teach science using an inquiry approach to integrate ethnoscience.

METHOD

This research uses a quasi-experimental research method. The quasi-experimental form that the researcher used in this study was the One-Group Pretest-Postest Design, in which the form of this study contained a pretest before treatment, so that the results of the treatment could be known more accurately, because they could be compared with conditions before being given treatment. The population in this study were all 30 Grade VIII students spread across SMP Christen Batuputih, SMP Waturu, SMP Wuarlabobar, and SMP Wermatang 1 Atap. From the population class, 2 classes were determined as the research sample with 15 students in the Experiment Class and 15 students in the control class. As the independent variable in this study is the learning model, namely the project based learning model, while the dependent variable is understanding the concept of science and the ability to think creatively.

The research instruments consisted of learning tools (RPP, test sheets and documentation) and data collection instruments (tests of understanding concepts and creative thinking ability). Learning devices are used in the implementation of learning, while data collection instruments are used as research data collection tools. The research data included the value of understanding concepts and creative thinking skills collected by written test techniques in the form of 15 multiple choice tests and 5 number essay tests. The data were analyzed with descriptive statistics and ANCOVA test. Descriptive analysis is used to describe the value of conceptual understanding and creative thinking ability.

DISCUSSION RESULT

Based on the results of the linearity test, it is known that the F deviation from linearity test value is 0.215 with a significant value of 0.807. Because the significant value of the F Deviation from linearity is not significant ($0.807 \geq 0.05$), the relationship between the two variables, namely the application of PjBL to students' Creative scores, is concluded to not fulfill the linearity assumption.

Table 1. Results of the Ancova

			Sum of Squares	df	Mean Square	F	Sig.
Creative Thinking Treatment * Class	Between Groups	(Combined)	230.600	3	76.867	3.798	.015
		Linearity	221.880	1	221.880	10.963	.002
		Deviation from Linearity	8.720	2	4.360	.215	.807
	Within Groups		1133.333	56	20.238		
	Total		1363.93	59			
Concept Mastery Treatment * Class	Between Groups	(Combined)	5767.600	3	1922.533	16.774	.000
		Linearity	4625.613	1	4625.613	40.358	.000
		Deviation from Linearity	1141.987	2	570.993	4.982	.010
	Within Groups		6418.400	56	114.614		
	Total		12186.00	59			

The results of the Ancova test showed that the magnitude of the influence of PjBL between the schools as the research sample after controlling for the control variables found an F value of 5.445 with a significant value of 0.023. It can be stated that it is not significant because the significant value is ≥ 0.05. Thus it can be concluded that it is not significant even though it is controlled by the PjBL model user variable as a Covariance. These results indicate that the use of PjBL has no effect on differences in student learning outcomes in the ability to think creatively in the material/concept of woven cloth. Whereas for Ancova test between Concept Understanding show a value of 9,683 with a significant value of 0,000. Because the significant value is more than ≤ 0.005, it can be concluded that there are differences in the value of conceptual understanding of the concept.

The low understanding of the concept is caused by the use of learning models that are not in accordance with students' abilities to create a monotonous and even sometimes boring learning atmosphere and lack of interest in student learning (Suranti et al, 2016). Supported by Restami et al, (2013) factors that can lead to low understanding of students' concepts one of which is the learning model applied by the teacher, so that in the learning process the teacher is more active than students with learning methods that tend to be monotonous and less involve students finding a concept in the process learning.

PjBL model has the potential to develop creative thinking skills. PjBL emphasizes student activity and involvement in learning and provides opportunities and confidence for students to express ideas through project completion to produce creative thoughts (Mrayyan, 2016; Salam, Mailok, Ubaidullah, & Ahmad, 2016). According to Alkiyumi (2010) the ability to think creatively can be empowered through learning activities that lead to creative thinking; facilitating students to learn with phenomena, problems, images, and objects that raise questions and multiple interpretations.

CONCLUSION

1. The integrated numbered head together (NHT) problem based learning (PBL) model influences the critical thinking of SMA N. 11 and SMA N. 13 Ambon students, this is evidenced by a significant value of 0.000 at SMA N.11 and 0.001 at SMA N.13 Ambon
2. The integrated numbered head together (NHT) problem based learning (PBL) learning model influences student learning outcomes at SMA N. 11 and SMA N. 13 Ambon, this is evidenced by the significant value of 0.000 at SMA N.11 and 0.000.
1. Integration of ethnoscience-based project based learning can improve understanding of science concepts.
2. The integration of ethnoscience-based project based learning can improve students creative thinking ability.

3. There is a significant difference in the value of understanding science concepts and students creative thinking ability between the sample groups of SMP Negeri 3 Wuarlabobar, SMP Negeri 3 Waturu, SMP Christen Batuputih and SMP 1 Atap Wertmatang.

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