

Implementation of Ethnoscience to Improve Elementary School Students' Critical Thinking Ability in Science Learning

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Abstract

This study discusses the importance of integrating ethnoscience into elementary school education to enhance students' understanding of local culture as well as their interest and motivation in science. The ethnoscience approach, which connects scientific knowledge with culture and local wisdom, can make learning more meaningful and relevant to students' daily lives. The research method used is empirical juridical with a descriptive qualitative approach through interviews and documentation. The results of the study show that ethnoscience-based learning can improve students' critical, creative, and systematic thinking skills, as well as foster a love for their culture and environment. The implementation of ethnoscience in the Indonesian education curriculum not only increases students' science literacy but also helps them apply scientific knowledge to solve real-life problems. Therefore, the development of ethnoscience-based learning models and methods is essential to support students' interest and academic achievement in science.

Keywords: Ethnoscience, contextual learning, local culture, scientific literacy, basic education

INTRODUCTION

Description Educators train their students to gain knowledge, known as learning. Consequently, learning activities must be able to adapt to their environment. If the environmental potential is utilized optimally, learning activities will become more meaningful (Setyowati et al., 2023). Contextual learning is a type of education in which students' direct experiences are connected to the lessons they are learning (Aji, 2017)

A teacher is required not only to provide knowledge, develop attitudes and train skills, but more than that. Teachers must be able to integrate the learning atmosphere into the students' socio-cultural environment, so that the learning process is not far from their objective life (Sakti et al., 2020)

According to (Sudarmin, 2015) it is recommended that education in Indonesia be able to use a scientific approach to ethnoscience, namely an original knowledge in the form of language, culture, morals, customs and technology found in society or certain people which contains elements of scientific knowledge (Puspasari et al., 2019). In the 2013 curriculum, it explains also that the learning carried out in elementary schools is developed thematically and respects ethnoscience in learning activities. Integrating ethnoscience in the learning process can be done by utilizing

community culture. Basically, ethnoscience learning can help teachers teach science that is linked to culture, local wisdom, and phenomena found in society. With this, students can apply science learning outcomes to solve problems they encounter in their surrounding environment, so that learning is more meaningful for students. Ethnoscience-based learning is not only adapted to the curriculum and current developments, but can be used as a means of cultivating an attitude of love for the nation and culture, honing critical thinking skills, and providing students with an understanding of the local culture found in the surrounding environment. (Sari et al., 2021)

It is very important to integrate ethnoscience in learning in elementary schools, because students are still experiencing concrete operational cognitive development based on this phase, learning in elementary schools should begin with something concrete and close to the lives, knowledge and experiences of students (Piaget in Prastowo, nd :2014). Through learning from an ethnoscience perspective, students are able to apply it directly to the surrounding environment, making it easier to identify, analyze something from scientific studies and summarize in general terms. Based on these facts, learning is needed that utilizes the local environment and culture as a learning resource, so that learning

can provide direct experience and is oriented towards problem solving, critical, creative, systematic and logical thinking skills.(Fitriani, 2017)

Ethnoscience-based learning that does not separate cultural science and local or community wisdom can be used as a learning approach to increase students' interest and motivation towards science. With ethnoscience, students do not view science as a foreign culture that they are studying, but are seen as part of existing local culture and wisdom. This method can be taught with student-centered learning so that it can improve students' responses to science and increase the practical usefulness of science, human values, and the relationship between individuals and the environment.(Sayekti, 2019)

The aim of this research is to maximize students' learning potential in increasing understanding of local culture. The implementation of ethnoscience can increase interest, motivation or attitudes and can influence students' creative thinking learning process. The role of ethnoscience in the learning process is an effort to create learning that not only provides knowledge to students but also instills a sense of love for their local culture and environment.

METHOD

The research method contains the design of research activities, scope or object. In this research, the author uses an empirical type of research. Therefore, the research approach used is Empirical Juridical because this research is based on legal provisions and phenomena or events that occur in the field. This approach aims to understand the real situation regarding the facts that occur in society. The data collection method used is descriptive qualitative. This method produces descriptive data in the form of written or spoken words from people and observed behavior.

The resulting data is factual and accurate data, which reflects the facts and characteristics of a particular population or

situation. This research uses data collection techniques through interviews and documentation. The data sources used are primary data sources and secondary data sources. Primary data sources were obtained from elementary school students studying science. Secondary data sources are data that previously existed and were used as additional references in this research.

RESULTS AND DISCUSSION

The word ethnoscience comes from the words *ethnos* (Greek) which means nation, and *scientia* (Latin) which means knowledge. Therefore, ethnoscience is the knowledge possessed by a nation or more precisely an ethnic group or a particular social group as a system of knowledge and cognition typical of a given culture (Parmin, 2017). a society because it is different from other societies.

According to Sardjiyo (2005) the ethnoscience approach is a strategy for creating a learning environment and designing learning experiences that integrate culture as part of the learning process. Science learning should lead students to become literate about science and technology. One of the characteristics of ethnoscience learning according to Holbrook & Rannikmae (2009) is the development of a positive attitude towards science. Learning with an ethnoscience approach emphasizes achieving an integrated understanding rather than just in-depth understanding (Krajcik, 1999).

One way of learning with an ethnoscience approach, according to Pannen in Sardjiyo (2005), is to link the science to be studied with the culture where the students come from. Sayakti (2003) states that it is important for learning to use a local cultural approach and the surrounding environment or an ethnoscience approach as a learning resource so that the learning process is more meaningful for students. Emdin (2011) shows that connecting science and culture can influence the improvement of students' academic results. The research results of Rahayu et al. (2006) regarding the effectiveness of local culture-based learning

provides better results because learning takes place in a more meaningful way for students.

Learning with an ethnoscience approach is based on the recognition of culture as a fundamental (basic and important) part of education as the expression and communication of ideas and the development of knowledge (Joseph, 2010). Learning that uses cultural concepts as a learning resource can improve students' ability to use scientific knowledge, this is in accordance with the opinion expressed (Gunstone in Sudarmin, 2014).

In addition, through culture-based learning, students will make direct observations so that students can identify scientific questions, explain scientific phenomena and draw conclusions regarding natural conditions and changes made to nature through human activities. This is in accordance with the PISA 2006 statement which establishes three aspects of competency or process to increase scientific literacy in students using an ethnoscience approach.

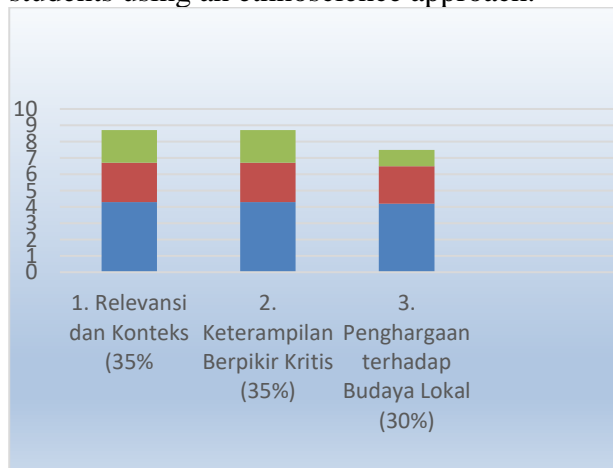


Figure 1. Ethnoscience-Based Competency Chart

Three aspects of ethnoscience-based learning competencies:

1. Relevance and Context (35%), Students can see direct connections between science and their daily lives, making learning more relevant and interesting.
2. Critical Thinking Skills (35%), Students are invited to think critically by comparing

and integrating traditional knowledge with modern scientific concepts.

3. Appreciation for Local Culture (30%), Increasing a sense of pride and appreciation for local culture and knowledge.

The three components above illustrate how ethnoscience-based learning can contribute to three main aspects that are important for student development in elementary schools.

In learning activities using an ethnoscience approach, it is hoped that students will be able to carry out science process skills, because this type of learning is packaged through observation, discussion, presentation and practicum. Students' activities during learning using an ethnoscience approach are accompanied by students' process skills which show improvement. Thus, ethnoscience-based learning can be used as a reference as an effort to increase scientific literacy. (Utami Dian Pertiwi)

CONCLUSION

Ethnoscience-based learning that does not separate science, culture and local wisdom or society can be used as a learning approach to increase student interest or motivation as well as student learning achievement in science. With ethnoscience, students do not view science as a foreign culture that they are studying, but are seen as part of existing local culture and wisdom. This method can be taught with student-centered learning so that it can improve students' responses to science and increase the practical usefulness of science, human values, and the relationship between individuals and the environment.

The development of ethnoscience-based learning models, methods and tools is needed to support the formation of students' interest in science. By forming students' interest in science, it is hoped that it can raise students' awareness of learning about science so that it can improve student learning achievement. Ethnoscience encourages teachers and educational practitioners to teach science

based on culture, local wisdom and problems that exist in society, so that students can understand, understand and apply the science they learn in the classroom to be used in everyday life, as well as to solve problems. problems they encounter in everyday life, this makes science learning in the classroom more meaningful.

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