

Implementation of Ethnoscience Learning in Science and Social Learning to Elementary Students

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Abstract

This research aims to describe the implementation of Ethnoscience learning in Science and Social Learning to elementary students, including the obstacles and the solutions as well as student learning outcomes. This research uses a qualitative approach with a descriptive type. The data used is the result of observation, interviews and documentation. The analysis was carried out by applying a descriptive qualitative interactive model approach. The research results show that 1) Implementation of Ethnoscience learning in Science and Social Learning is carried out by observing, identifying, preparing questions, discussing, completing assignments, and submitting assignment results. The learning process takes place in a way that students understand the lesson material in a real way and in accordance with everyday life; 2) The obstacle faced by teachers in learning is that the learning process takes a relatively long time or requires a lot of time. 3) To overcome these obstacles, teachers carry out supervisory and guidance functions during the learning process; and 4) The results of implementing Ethnoscience learning in Science and Social Learning are that student learning outcomes increase. The results of the research concluded that Ethnoscience learning is very appropriate to apply to Science and Social Learning because it is interrelated in terms of using the environment as learning resources.

Keywords: *Ethnoscience, social and science learning*

Abstrak

Penelitian ini bertujuan untuk mendeskripsikan implementasi pembelajaran Etnosains dalam Pembelajaran IPA dan Sosial pada siswa SD, beserta kendala dan solusi serta hasil belajar siswa. Penelitian ini menggunakan pendekatan kualitatif dengan tipe deskriptif. Data yang digunakan merupakan hasil observasi, wawancara dan dokumentasi. Analisis dilakukan dengan menerapkan pendekatan model deskriptif kualitatif interaktif. Hasil penelitian menunjukkan bahwa 1) Implementasi pembelajaran Etnosains dalam Pembelajaran IPA dan Sosial dilakukan dengan cara mengamati, mengidentifikasi, menyiapkan pertanyaan, berdiskusi, menyelesaikan tugas, dan menyerahkan hasil tugas. Proses pembelajaran berlangsung sedemikian rupa sehingga siswa memahami materi pelajaran secara nyata dan sesuai dengan kehidupan sehari-hari; 2) Kendala yang dihadapi guru dalam pembelajaran adalah proses pembelajaran memerlukan waktu yang relatif lama atau memerlukan banyak waktu. 3) Untuk mengatasi kendala tersebut, guru melaksanakan fungsi pengawasan dan bimbingan selama proses pembelajaran; dan 4) Hasil penerapan pembelajaran Etnosains pada Pembelajaran IPA dan Sosial adalah hasil belajar siswa meningkat. Hasil penelitian menyimpulkan bahwa pembelajaran Etnosains sangat tepat diterapkan pada Pembelajaran IPA dan Sosial karena saling berkaitan dalam hal pemanfaatan lingkungan sebagai sumber belajar.

Kata kunci: *Etnosains, Pembelajaran IPS dan IPA*



INTRODUCTION

In science learning, applying a learning approach that can develop a scientific attitude and curiosity about what is happening in the surrounding environment is important. Samatowa (2020, p. 2) provides an opinion, "Science in elementary schools should provide opportunities to foster students' natural curiosity. This will help them develop the ability to ask questions and find answers based on evidence and develop a scientific way of thinking. The focus of the science and science teaching program in elementary schools should be aimed at fostering students' interest and development in the world in which they live." This opinion explains that science and science learning in elementary school aims to develop students' scientific thinking abilities (intellectual), skills (vocational) and social abilities (social and personal skills). In other words, science learning aims to develop the three learning domains, namely affective, cognitive and psychomotor. The aim from the affective domain perspective is to develop students' curious attitude towards God's creation. The goal from a cognitive domain perspective is to develop students' understanding of the subject matter. The aim from a psychomotor perspective is to develop process skills through direct observation of the object being studied. The learning approach applied must be able to provide opportunities for students to be active in their learning environment. Providing ample opportunities for students to work together and help each other in understanding lesson material will build their understanding of knowledge, behavior and skills.

Currently, SDN Sareng 02 Madiun is implementing the Independent Curriculum. In the Merdeka Curriculum, science and social studies subjects are combined into Natural and Social Sciences (IPAS) subjects with the hope of triggering students to be able to manage the natural and social environment in one unit. According to the Educational Standards, Curriculum and Assessment Agency of the Ministry of Education, Culture, Research and Technology (2022), the challenges faced by the world of education today are not the same as the problems faced a decade earlier. Science and technology must continue to be developed to solve every challenge faced. Therefore, the science and technology education pattern needs to be adjusted so that students can answer and resolve the challenges they will face in the future.

One of the problems faced by teachers in delivering Natural Science material is related to the implementation of learning models. Research conducted by Winangun (2022) with the title "Problematic Analysis of the Science Learning Process in Elementary Schools" concluded that teachers still implement teacher-centered learning for the reason of controlling class conditions. This is in line with empirical evidence which states that learning with a teacher-centered approach is most often carried out in science classes when compared with social constructivist and student-centered approaches (Teppo, et. al., 2021). Lestari (2019) found that teachers did not vary the use of learning models and were less than optimal in classroom management. This causes the learning process to become monotonous and low mastery of learning material. In fact, if teachers can apply and vary innovative learning models, they can have a positive impact on the science learning process in elementary schools.

The problem faced by the fourth grade teacher at SDN Sareng 02 Madiun in delivering material on plant reproduction is the students' low understanding of the subject matter. This is proven from the learning results in the formative tests carried out at the end of learning. There were 3 out of 20 students (15%) who completed their studies and met the Minimum Completeness Criteria (KKM), namely 74, while 17 out of 20 students (85%) did not complete their studies and did not meet the KKM (documentation source in pre-research). This shows that the majority of students have not succeeded in achieving the basic competency achievement indicators that have been determined, namely being able to analyze plant reproduction.

To overcome the learning problems of the fourth grade students at SDN Sareng 02 Madiun above, the class teacher implemented Ethnoscience-based learning.

Ethnoscience-based learning is very relevant when applied in science and science learning. According to Ardianti, et al. (2022), "Ethnoscience-based learning was developed as science learning that incorporates cultural content from the community in every student learning activity. In project learning activities that are planned by students with surrounding cultural content related to learning materials". In other words, ethnoscience-based learning was developed for science and science learning which includes cultural content from the surrounding community in every student learning activity. In learning activities planned by students with the surrounding environment related to the learning material. Another opinion was expressed by Rusmansyah, et al. (2023), "In education, ethnoscience learning can be a breakthrough that combines culture with science in the learning process. The application of ethnoscience-based learning will strengthen students' understanding of science concepts because they study culture and local wisdom to reveal the scientific knowledge in it." This opinion states that in the world of education, ethnoscience learning can be a breakthrough that combines culture with science in the learning process. The application of ethnoscience-based learning will strengthen students' understanding of scientific concepts because they can study local culture and wisdom to express scientific knowledge in them. Jannah, et al. (2022) emphasized that, "Ethnoscience based learning takes the advantages of various potentials besides characters and local contents". Thus, Ethnoscience-based learning provides many benefits from various potentials in addition to local characters and materials.

Research conducted in science learning for elementary school (SD) students conducted by Senjawati (2020) underlines that ethnoscience-based learning in science material can increase interest or high enthusiasm for learning. This has an impact on the assessment results which have increased significantly. Another research conducted by Dinissjah, et al. (2019) also stated that critical thinking skills increased in students who were treated with ethnoscience-based learning. Other research related to the application of Ethnoscience-based learning reveals the results that there is effectiveness in learning outcomes when applied to science or natural science material. Ethnoscience-based learning can improve learning outcomes when compared to conventional learning (Putri, et al., 2022).

Based on the description of relevant research that has been carried out by previous researchers, this research has something in common, namely the application of Ethnoscience learning. The difference in research that is relevant to this research is that it was conducted on science and technology subject matter. Often problems that arise in learning cannot be resolved by looking at it from a natural scientific point of view or from a social science point of view alone, but rather a more holistic approach is needed that includes various cross-disciplinary disciplines. To provide students with an understanding of this, learning natural sciences and social sciences needs to be combined into one unit.

This research aims to describe the implementation of Ethnoscience learning in class IV science subjects, including the obstacles faced and solutions as well as student learning outcomes.

METHOD

This study uses a descriptive-qualitative research approach. According to Rahmat (2020, p. 104), "A descriptive-qualitative research is used to describe a phenomenon that is happening, and to explain how the phenomenon as what it is". In other words, a descriptive-qualitative research investigates a phenomena that occur in real life. It also has various sources that are used as search tools and evidence. This study is conducted for six months from November 2023 to April 2023. The subjects used in this study were class IV teachers at SDN Sareng 02 Madiun. Another subject used was students of class IV at SDN Sareng 02 Madiun. The total number of students

is 20 with different characteristics, especially the level of ability to understand science material. This research uses a qualitative research approach. Data analysis in this research refers to qualitative data analysis which is carried out interactively and takes place continuously through data collection, data reduction, data presentation (data display), and conclusion/verification (conclusion drawing/verification) (Miles and Huberman, 2001, p. 127). First, researchers collect data through observation, interviews and documentation. Second, after data collection is complete, the researcher reduces the data that has been obtained, namely by classifying, directing, discarding what is not necessary, and organizing the data. Third, researchers present data in the form of descriptive words. Fourth, researchers make conclusions from the data obtained. Furthermore, this research uses an induction thinking pattern in the form of drawing general conclusions from specific cases in the form of interpretation results. This means achieving a correct understanding of the reality faced and studied because it relies on objective evidence and achieving authentic truth, namely information about the implementation of Ethnoscience learning in Social and Science Learning (IPAS).

RESULTS AND DISCUSSION

The application of Ethnoscience-based learning is the teacher's attempt to solve the problem of science learning, namely students' low understanding of plant breeding material. Ethnoscience-based learning was chosen as an alternative problem solving because this learning is one of the learning methods that is suitable to be applied in science learning. According to Jannah, dkk. (2022, h. 181), "The ethnoscience approach in science learning contributes very well to preserving local culture so that students can develop scientific literacy and reintroduce the culture. Nowadays learning is no longer emphasizes understanding, but on critical, creative thinking and problem solving skills by using various learning models such as project based learning and discovery learning models in the field of science learning starting at elementary, junior high school, senior high school or college levels". It can be said that the science learning process places more emphasis on ethnoscience-based learning so that students can discover facts, build scientific concepts, theories and attitudes. The opinion is supported by Rusmansyah dan Sofia (2023, h. 2), Ethnoscience is the knowledge that comes from culture and is part of a society with a science concept. The knowledge is the language, customs, traditional food, moral values, habits, rules, and prohibitions on technology created in a society with scientific knowledge. In education, ethnoscience learning can be a breakthrough that combines culture with science in the learning process. The application of ethnoscience-based learning will strengthen students' understanding of science concepts because the students study culture and local wisdom to reveal the scientific knowledge in it. In addition, students can apply the concept of science and connect the material with community knowledge so that scientific literacy will also increase.

The environment was chosen as an alternative learning resource with the aim of connecting the subject matter with everyday reality. In this case, teachers use plants in the school environment as learning resources. Another goal is to provide opportunities for students to understand the lesson material in a real way and in accordance with students' daily lives. This is in accordance with the principles of science learning presented by Samatowa (2010, p. 104) that science learning must be related to students' daily lives. In this regard, Komalasari (2011, p. 124) provides the opinion that the use of the physical environment (nature) as a learning resource is useful for developing students' potential, understanding the causes of events, and knowing the relationship between facts in the surrounding environment. Thus, science learning must emphasize direct learning activities involving the environment as students' daily reality. According to Dewi, et. Al. (2021), Ethnoscience is a learning approach that elevates

local culture or wisdom to become an object of science learning. The introduction of science learning from the perspective of local culture and structured local knowledge relating to certain natural phenomena and events would increase students' scientific interests and make it easier for students to understand them.

If viewed from the principles of learning and learning, it is very necessary to use the environment as a learning resource. Hamdani (2011, p. 23) states that the learning target is to build scientific ideas after students interact with the environment, events and information from their surroundings. The same thing is explained by Hanafiah and Suhana (2012, p. 18) that learning starts from learning sources and teaching materials that are factual and easily observed by the five senses to learning resources and teaching materials that are conceptual in nature. Learning starts from concrete things to abstract things. This opinion states that the learning resources used should be real objects and can be observed directly by students. In the opinion of Solheri, et.al. (2022), efforts to increase scientific literacy in Indonesia can be done with ethnosience-based learning. Where the ethnosience approach is a strategy for creating a learning environment and designing learning experiences that integrate culture as part of the learning process.

In implementing Ethnosience learning in class IV science and science subjects at SDN Sareng 02 Madiun, the teacher experienced several obstacles. The first obstacle is time allocation. In this case, the learning process takes a relatively long time or requires a lot of time. The learning process carried out by the teacher also requires a planning process which is quite time consuming. In this case, the teacher must design learning, including classroom management formats, prepare environmental learning resources, prepare learning tools, and condition students.

The second obstacle is a learning situation where students are still busy with their own activities, or pay little attention to the learning process. Since the learning process requires students to observe directly in discussing problems and finding solutions to problems, the impact that occurs is that student activities and learning situations tend to be busy and a bit noisy. Applying Ethnosience learning to science subjects, some students are still busy with their own activities and pay less attention to the learning process. So the impact that occurs is that student activities are less controlled and the learning situation tends to be busy. So the role of the teacher here is very important in directing students. With a conducive situation, the learning process can run smoothly and make students more active in participating in learning.

Students' understanding of the subject matter increased after the teacher implemented ethnosience-based learning with environmental learning resources. The number and percentage of students who completed their studies increased from 3 students (15%) to 18 students (90%).

The increase in students' understanding of the subject matter is caused by the teacher's efforts to improve the quality of learning. This is in accordance with what Hamdani (2011, p. 60) stated that the role of the teacher is one of the factors that influences learning completion. One of the teacher's duties is to provide alternative learning strategies for students who experience learning difficulties. Efforts to improve the quality of science learning are carried out by teachers by implementing ethnosience-based learning with environmental learning resources. Teachers relate the subject matter to students' real-world situations and encourage students to make connections between the knowledge they have and its application in everyday life. Students are given the opportunity to understand how plants adapt through direct and real observation in the school environment. The learning process becomes more meaningful and real. Increasing students' understanding of the subject matter is in accordance with what was conveyed by Trianto (2014, p. 150) that through Ethnosience-based learning, student learning success can be achieved optimally, subject matter is easier to learn, understand and remember because students gain

direct experience from it. learning events through observation. In this case, Siswoyo (2021) stated, "Learning using ethnoscience is believed to change the approach from teacher to student-centered learning. Furthermore, ethnoscience is an effort to create a learning atmosphere and experiences by collaborating with culture as part of the learning process". So, learning using ethnoscience is believed to change a teacher-centered learning approach into student-centered learning. Furthermore, ethnoscience is an effort to create a learning atmosphere and experience by collaborating with culture as part of the learning process.

CONCLUSION

The implementation of Ethnoscience learning in class IV science and science subjects at SDN Sareng 02 Madiun is carried out by providing opportunities for students to experience directly the environment around them. In addition, various kinds of plants around students are used as environmental learning resources. The learning process takes place in a way that students understand the lesson material in a real way and in accordance with everyday life.

The obstacle faced by teachers in learning Ethnoscience in science subjects is that the learning process takes a relatively long time or requires a lot of time. During learning, some students are still busy with their own activities, or pay less attention to the learning process. Some students also experience difficulties when finding solutions to problems. To overcome these obstacles, teachers carry out supervisory and guidance functions during the learning process. The result of the implementation of Ethnoscience learning in the fourth grade science and science subject at SDN Sareng 02 Madiun is that students' understanding of the material on plant reproduction has increased. The number and percentage of students who completed their studies increased from 3 students (15%) to 18 students (90%).

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