



The Effectiveness of Ethnoscience Learning Based on Local Wisdom Values in Elementary Schools

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ABSTRACT

The ethnoscience learning strategy is designed to develop students' ethnographic insight into scientific knowledge by combining modern science with traditional knowledge possessed by local communities or specific ethnic groups. As such, its implementation in elementary schools is highly relevant for developing students' appreciation of local wisdom values. The assessment of its effectiveness served as the primary basis for conducting this study, which was analyzed using a case study-based mixed-methods approach involving teachers and students from grades IV, V, and VI as a representation of the population at SDN 1 Nalu. The findings show that ethnoscience learning, based on strengthening local wisdom values, is highly effective in several ways: (1) increasing students' understanding of ethnoscience concepts; (2) improving students' critical thinking skills related to the development of local wisdom and scientific insights; (3) fostering the development of scientific attitudes; and (4) promoting the development of students' character in relation to local wisdom. The implications of these findings suggest that ethnoscience learning is an approach that stimulates the development of students' scientific concepts in connection with cultural heritage and the practice of local wisdom values in Tolitoli Regency, thereby increasing students' awareness of regional cultural heritage.

Informasi Artikel

Kata Kunci:

Pembelajaran Etnosains; Nilai Kearifan Lokal; Sekolah Dasar

ABSTRAK

Strategi pembelajaran dengan pendekatan etnosains dirancang untuk mengembangkan wawasan etnografis sains ilmiah siswa dengan menggabungkan ilmu pengetahuan modern dengan pengetahuan tradisional yang dimiliki oleh masyarakat lokal atau etnis tertentu, sehingga pengajarannya di sekolah dasar sangat relevan untuk mengembangkan nilai kearifan lokal siswa. Pengkajian efektivitas penerapannya, kemudian menjadi dasar utama dilakukannya penelitian ini yang dianalisis dengan menerapkan pendekatan *mixed method* berbasis studi kasus yang melibatkan guru dan siswa kelas IV, V, dan VI sebagai representasi dari populasi SDN 1 Nalu. Hasil temuan menunjukkan bahwa pembelajaran etnosains berbasis penguatan nilai kearifan lokal memiliki efektivitas yang tinggi seperti: (1) meningkatnya pemahaman konsep etnosains siswa; (2) Keterampilan berpikir kritis etnosaintis siswa dalam hubungannya dengan pengembangan wawasan kearifan lokal dan sains menjadi lebih baik. (3) Berkembangnya sikap ilmiah; dan (4) Terbinanya karakter kearifan lokal siswa. Implikasi temuan analisis ini, menjadikan pembelajaran etnosains sebagai pendekatan yang menstimulasi berkembangannya konsep sains siswa terhadap

cagar budaya dan pengamalan nilai kearifan lokal ada di Kabupaten Tolitoli sehingga meningkatnya kesadaran siswa terhadap warisan budaya daerah.

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INTRODUCTION

In the current era of globalization, students tend to be more exposed to foreign cultures, causing a lack of understanding of the expertise and cultural heritage that is unique to Indonesian society. Therefore, efforts are needed to improve students' understanding of cultural heritage. One effort that can be made is to introduce cultural values rooted in local wisdom to students which are linked to learning. [Anzelina \(2023\)](#) defines learning based on strengthening local wisdom as an effort to manage the environment effectively and connect it with scientific events. Of course, this is interesting for introducing ethnosience understanding to students, especially if the learning is packaged in the context of environment-based education ([Trisiana et al., 2023](#); [Wakhidah & Erman, 2022](#)).

Strengthening the concept of ethnosience as an effort to introduce and instill wisdom about the environment which can be patterned in children's natural science learning ([Jagannathan et al., 2018](#)), this teaching patterning makes it possible to find the meaning behind the love of nature and the environment ([Bobsin et al., 2023](#)). In the context of its implementation in schools, ethnosience can be interpreted as a learning action carried out by teachers so that students are stimulated to love scientific phenomena that occur in their environment wisely. Therefore, the ethnosience learning process can optimize children's science learning activities with the nuance of strengthening local wisdom that is meaningful for children's lives.

As explained by [Nuralita \(2020\)](#), learning that uses an ethnosience approach is based on understanding that culture has a crucial and basic role in education, acting as a means of conveying ideas and developing knowledge. The importance of implementing an ethnosience approach in education is to maintain the cultural heritage of society ([Ningrum et al., 2018](#)). Along with achieving science goals which focus on mastering

knowledge, skills, values and attitudes, so that students can be actively involved in their environment (Syafrial et al., 2022).

Of course, the results of this interview represent the reality of adapting ethnoscience learning, which may not have been accommodated in several schools, including those in Tolitoli Regency, Central Sulawesi Province. Meanwhile, ethnoscience learning is crucial in developing ethnographic insights and raising students' awareness of their regional localities, in accordance with the specific characteristics of their region. This is especially relevant when paired with the content of science and scientific learning materials, such as those in the implementation of the Independent Learning Curriculum.

Based on the results of pre-research observations at SDN 1 Nalu, ethnoscience learning has been integrated into natural science learning, but it has not been connected with the strengthening of local wisdom in the local area, which is the core focus of the ethnoscience concept. Therefore, the researchers are interested in conducting scientific studies, particularly on understanding students' ethnoscience, which is integrated with local wisdom values surrounding the students' environment.

According to Jumriani et al. (2021), local wisdom is an important aspect of a group's culture which is closely related to the language used by that community. Each local wisdom contains social, cultural and belief-based values held by a particular community group, explaining that generally this local knowledge is passed down through oral stories from one generation to the next. Local wisdom is reflected in folk narratives, proverbs, music and folk playing traditions. This is knowledge that arises from the experiences of local people, which is adapted and adapted to an understanding of the culture and natural environment of that place.

The relationship between local wisdom and the surrounding environment, society and culture is very close, because it is an effort by the community to protect and maintain their lives (Adeng, 2014). According to Irawatie et al. (2019), local wisdom which is part of culture has the potential to make ethnoscience a source of knowledge that can be explored to increase student learning motivation. The right learning attitude will influence the understanding of scientific concepts which then continues on students' ability to think critically to explain natural phenomena. In learning science with an ethnoscience approach, students can be actively involved in discovering concepts and explaining phenomena that occur around them.

Students' cultural fit with science lessons will reinforce each other, but if they are different, both can develop in parallel without alienating each other. Meanwhile, local knowledge is considered to have high value and provide great benefits to people's lives. Encouragement to maintain, maintain and improve the quality of life in line with the conditions, needs, abilities and values held by society. become a driving factor for its development (Njatrijani, 2018).

In this age of technological and information advancement, there is a significant focus on the importance of paying attention to local wisdom. The increase in science and technology that occurs due to globalization often reduces moral values and social order which originates from ignoring local wisdom (Ilhami & Permana, 2023). Today's students lack concern and affection for tradition. We can introduce local cultural values to students through the teaching and learning process at school and the learning process outside school (Iswatiningsih, 2019). To maintain the existence of strong local culture and wisdom, it is important for students as potential heirs of the nation to be prepared by respecting cultural heritage and local wisdom.

One of the proposed ways is to incorporate cultural understanding into the teaching and learning process, considering that regional customs, traditional wisdom and the natural environment have the potential to play an important role in improving students' learning experiences in various dimensions such as ways of thinking (cognitive), attitudes (affective), and action (psychomotor). Therefore, educational innovation is needed that includes the integration of culture and science, also known as ethnosience, in order to strengthen understanding and appreciation of cultural diversity and local wisdom (Mayasari, 2017). Ethnosience teaching, which combines cultural science and local wisdom and involves community participation, can be a teaching method that stimulates students' enthusiasm and encouragement about science (Rahayu & Sudarmin, 2022).

This is particularly interesting because it increases students' awareness of Tolitoli culture, especially about the appreciation of their cultural heritage. Tolitoli, with its extraordinary wisdom and cultural richness, has great potential to be part of learning that can enrich students' insights and experiences. Integrating local wisdom and regional cultural values into the learning process can help students understand the importance of maintaining and preserving the traditions around them. Students can be taught to appreciate their cultural heritage in cognitive, affective, and psychomotor aspects through an ethnosience approach that blends science with local culture. Therefore, the aim of this research is to assess the success of the ethnosience learning project in increasing understanding of local wisdom values integrated in science learning for students in grades IV, V and VI at SDN 1 Nalu. The contribution of this research was that information on students' understanding of ethnosience included understanding of ethnosience concepts, ethnosience critical thinking skills, scientific attitudes, and students' local wisdom character.

METHOD

This research applies the mixed-method version of [Creswell & Creswell \(2018\)](#) based on interpreting qualitative and quantitative analysis of findings. Through this descriptive qualitative-quantitative analysis, it will be easier to interpret research findings which show the quality of ethnoscience learning which is oriented towards strengthening contextualistic insight into students' local wisdom values at SDN 1 Nalu as the main focus in this research project involving teachers and students in grades IV, V, and VI as a representation of the study population.

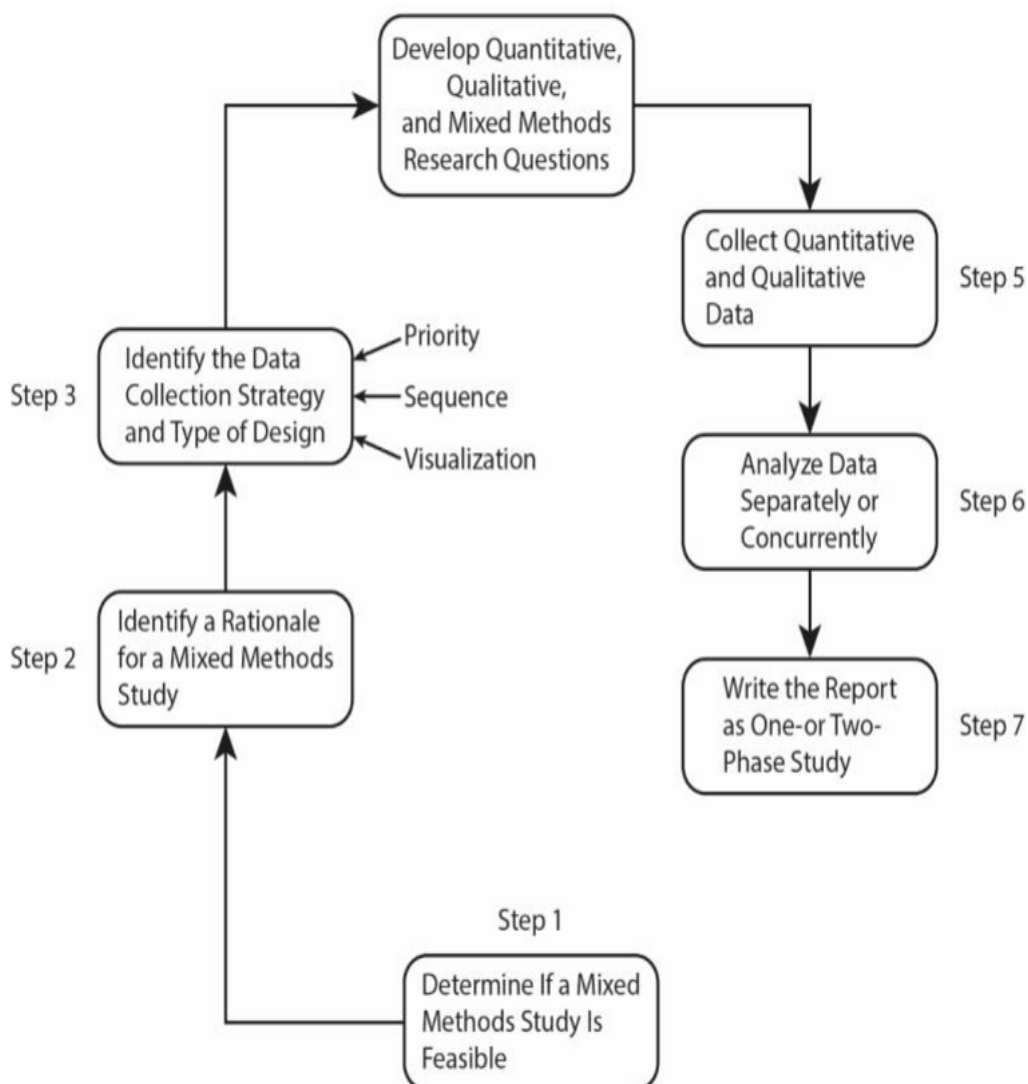


Figure 1. The Flow of the Mixed-Method Research Design

Interviews, observations and recording of found data function as necessary methods for carrying out field finding data analysis, which is then verified using various sources and techniques. All of these data collection techniques are very important in efforts to develop students' ethnoscience insights, especially those related to the value of local wisdom in Tolitoli which can be done with various parties who have knowledge or

experience about the culture, traditions, and local values that exist in the area, such as community leaders, cultural experts, or families who have hereditary cultural heritage.

This technique makes it easier to sharpen the search for accurate information about cultural values that are the basis of various community practices, such as in agriculture, handicrafts, traditional ceremonies, or the social system that prevails in Tolitoli. In addition, it can also provide students with insight into how the local knowledge that exists in Tolitoli can be linked to scientific concepts, for example in terms of sustainable management of natural resources or environmentally friendly traditional agricultural systems. By listening directly to the stories and experiences of the speakers, students not only learn about the theory, but also gain a deeper and contextual understanding of the application of these values in real life.

The data analysis process involves the steps of collecting qualitative and quantitative data, compiling, presenting information, interpreting findings and drawing conclusions to obtain accurate information regarding understanding of ethnoscientific concepts, ethnoscientific critical thinking skills, scientific attitudes, ethnoscientific character that is formed after students take part in ethnoscience learning which is integrated with natural science learning at SDN 1 Nalu.

RESULTS AND DISCUSSIONS

A. Results

Ethnoscience-based learning that focuses on strengthening local wisdom is a scientific way to combine scientific knowledge with traditional wisdom from a particular ethnic or cultural group which needs to be presented as early as possible in student learning in elementary school education units, including at SDN 1 Nalu. This approach respects the traditional cultural heritage of a given society, while seeking to integrate it with more up-to-date scientific knowledge.

This perspective regarding the importance of learning is packaged as in natural science learning at SDN 1 Nalu, reflected through the information obtained on Saturday, March 2 2024, which is representatively said to be good for teaching and getting used to for students as a provision to build student interaction with local conditions.

Table 1. Representation of Teachers' Views Regarding the Implementation of Ethnoscience in the Context of Strengthening Students' Local Wisdom

No.	Interview Questions	Interview Answers
1.	Have you previously implemented ethnoscience learning based on strengthening local wisdom values?	Once, in natural science lessons and combined with local wisdom values.
2.	What methods or approaches are applied in teaching ethnoscience?	The method used by the teacher is the lecture method, which involves conducting discussions and searching on the internet regarding local habits of the

3. How is evaluation carried out to ensure students' understanding of the concepts of ethnoscience and local wisdom applied in learning?	Tolitoli people such as drinking herbal medicine.
4.. Are there any obstacles when implementing ethnoscience learning based on strengthening local wisdom values?	The evaluation is carried out verbally and in writing. Meanwhile, in deepening the concept, especially for students who do not understand, the teacher gives them extra assignments. Apart from that, the teacher can advise the student to join with friends who already understand the concept, so that those who understand can help students who do not yet understand the material.
5. How to overcome obstacles when implementing ethnoscience learning based on strengthening local wisdom values?	The obstacle experienced by teachers when teaching ethnoscience-based learning is ethnic differences. Which is quite difficult to teach Tolitoli culture from other ethnicities. All teachers in schools have implemented what is called ethnoscience learning, even the 2013 curriculum has been implemented. What is implemented is that the teacher provides lessons from the surrounding environment.

Table 2. Representation of Students' Views Regarding the Implementation of Ethnoscience in the Context of Strengthening Students' Local Wisdom

No.	Interview Questions	Interview Answers
1.	Are you interested in implementing ethnoscience learning based on local wisdom?	Yes, very interested because learning is very fun. There are lots of ice breakers combined with learning. And they don't feel bored if they continue studying in class and they are very interested in continuing to learn Tolitoli.
2.	What benefits can be gained from implementing ethnoscience learning based on local wisdom?	The benefit is that they can know and recognize the identity of the environment around the students. And they are very enthusiastic in learning it.
3.	Does Ananda hope that there will be more ethnoscience learning based on local wisdom?	Very hopeful, because they still want to find out about ethnoscience learning based on strengthening local wisdom values. And they hope that this learning will always be there and feel happy in learning.

Table 3. Data on Ethnoscience Understanding Based on Local Wisdom of Class IV Students SDN 1 Nalu

	N	Mean	Std. Deviation	Minimum	Maximum
Understanding Ethnoscience Concepts	20	79.55	11.237	56	95
Ethnoscience Critical Thinking	20	78.90	10.513	56	95
The Scientific Attitude of Ethnoscience	20	80.60	8.708	58	96
Character of Local Wisdom	20	80.05	6.684	58	88
Total	80	79.78	9.291	56	96

Table 4. Comparative Data on the Achievements of Students' Ethnoscience Understanding Indicators Class IV SDN 1 Nalu Based on One Way Anova Test

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	31.450	3	10.483	.11	.950
Within Groups	6788.500	76	89.322	7	
Total	6819.950	79			

Table 5. Data on Ethnoscience Understanding Based on Students' Local Wisdom Class V SDN 1 Nalu

	N	Mean	Std. Deviation	Minimum	Maximum
Understanding Ethnoscience Concepts	22	81.77	6.172	68	95
Ethnoscience Critical Thinking	22	79.05	7.773	56	87
The Scientific Attitude of Ethnoscience	22	80.91	7.590	58	93
Character of Local Wisdom	22	80.55	7.035	63	90
Total	88	80.57	7.114	56	95

Table 6. Comparative Data on the Achievements of Students' Ethnoscience Understanding Indicators Class V SDN 1 Nalu Based on One Way Anova Test

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	85.500	3	28.500	.554	.647
Within Groups	4318.091	84	51.406		
Total	4403.591	87			

Table 7. Data on Ethnoscience Understanding Based on Students' Local Wisdom Class VI SDN 1 Nalu

	N	Mean	Std. Deviation	Minimum	Maximum
Understanding Ethnoscience Concepts	25	79.04	8.259	63	95
Ethnoscience Critical Thinking	25	79.44	8.530	63	95
The Scientific Attitude of Ethnoscience	25	79.12	7.639	65	94
Character of Local Wisdom	25	78.12	7.628	58	90
Total	100	78.93	7.917	58	95

Table 8. Comparative Data on the Achievements of Students' Ethnoscience Understanding Indicators Class V SDN 1 Nalu Based on One Way Anova Test

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	24.110	3	8.037	.125	.945
Within Groups	6180.400	96	64.379		
Total	6204.510	99			

Interpreting the results of this analysis, it is believed that the ethnoscience learning implemented at SDN 1 Nalu has an influence on learning, namely; 1) A positive influence in the form of appreciation for regional culture will emerge if the learning at the school being studied is in line with students' everyday cultural knowledge. This kind of learning process is called inculturation learning; 2) Student-centered learning will run effectively, because the process of assimilation and learning accommodation from students integrates the local conditions of their region. The role of education in introducing the concept of ethnoscience will help students avoid alienation from their local ecological, cultural and heritage environments which are currently affected by changing values due to globalization and technology (Ahmad et al., 2024; Kojonen, 2017; Price, 2019; Setyowati et al., 2023). The emergence of local wisdom is not spontaneous but goes through a continuous process and ultimately proves to be beneficial for life.



Figure 2. Building Students' Ethnoscience Insights into Tolitoli's Cultural Heritage

The results of interviews with class 4 homeroom teachers show that local wisdom-based learning has been applied by teachers in learning, especially in learning that is in contact with scientific phenomena. From the results obtained by the researchers, the teacher linked learning to the facts around the students, where there was a habit of some Tolitoli people who consumed herbal medicine. The purpose of linking this learning with the facts around students is to provide information to students, so that students are able to recognize the local wisdom that exists in Tolitoli.

The importance of integrating local wisdom in learning is supported by several studies, including research conducted by [Murwati et al. \(2022\)](#) which entitled "Thematic Learning Based on Local Wisdom in the New Normal Time in Elementary School" in his research revealed that local wisdom is very important considering that the learning process that occurs in the classroom, especially for elementary school students, should start with the world closest to them or that which is often encountered by students. Before teaching, teachers must carefully prepare an ethnoscience-based learning plan in the lesson plan. Each learning session involves the effective use of media, teaching materials, methods and models to achieve learning objectives.

The results of interviews during the learning implementation on Saturday, March 2 2024 also showed that ethnoscience learning which focuses on local wisdom, especially in Civics subjects, lacks variation in the use of learning methods. As a result, the learning situation looks less interesting. This is triggered by the learning situation which still relies on lecture methods which are not varied and do not involve the use of media or tools. As a result, student participation in the learning process decreases, resulting in a negative impact on their understanding of the material being taught. According to [Widyaningrum](#)

(2018), choosing a teaching method requires attention to the learning objectives to be achieved, student characteristics, subject matter, class conditions, existing resources, teacher skills, as well as evaluating the advantages and disadvantages of the various methods available.



Figure 3. Teacher Interview in Natural Science Learning at SDN 1 Nalu

The results of observations on Saturday, March 2 2024 showed that the evaluation was carried out to ensure students' understanding of learning. For evaluations carried out by teachers in the form of assignments or questions either verbally or questions that need to be answered by students to evaluate the level of students' understanding ability in mastering the material that has been taught, they are assessed, while teachers also carry out evaluations to determine which parts have been mastered by the participants. educate and what parts they still don't understand.

One option for students who don't fully understand or master the material is to give them assignments and invite friends who already have a good understanding to study together, share notes with each other, and discuss things they don't understand. An educator has responsibility for improving the quality of teaching, therefore, he must evaluate teaching methods to find out what improvements need to be made (Magdalena et al., 2023; Qurrotaini et al., 2024).

The results of the interview concluded that the ethnoscience learning approach which combines local wisdom values in science subjects in elementary schools has received a positive response from class IV students at SDN 1 Nalu. This learning approach is considered a benchmark in strengthening local wisdom, so the author hopes that all parties involved can continue to improve their skills and competencies to achieve the expected goals.

Table 9. Average Achievement of Ethnoscience Understanding Indicators for Students at SDN 1 Nalu

Class Representation	Number of Students	Indicators of Ethnoscience Understanding				Average Learning Outcomes
		Understanding Ethnoscience Concepts	Ethnoscience Critical Thinking Skills	Scientific Attitude	Character of Local Wisdom	
IV	20	79,55	78,90	80,60	80,05	79,76
V	22	81,77	79,05	80,91	80,55	80,57
V	25	79,04	79,44	78,12	78,93	78,88

The implementation of ethnoscience-based learning requires a change in the learning model from teacher-centered to student-centered, from individual learning to collaborative learning, and emphasizes the application of scientific knowledge, creativity, and problem-solving abilities to reconstruct original scientific knowledge. develop in society into scientific knowledge. As a result, ethnoscience can also be integrated into various learning models, such as the Discovery Learning model, Problem Based Learning (PBL), Project Based Learning (PjBL), constructivist approaches, contextual learning, and so on. Regarding ethnoscience learning at SDN 1 Nalu, researchers conducted follow-up interviews with several students on Saturday, March 23, 2024 who were randomly selected to represent the 67 student respondents involved in this research and representatively confirm the impact of the results of ethnoscience learning based on strengthening local wisdom at SDN 1 Nalu.

1. Student MA stated that ethnoscience learning was easy to understand and interesting because it involved local culture, especially the Tolitoli language.
2. Students with the initials AR stated that although it was somewhat difficult for them to understand the Tolitoli language due to their lack of habit, the learning experience was very interesting for them.
3. Students with the initials RS stated that all subjects were interesting, even though they had a little difficulty memorizing Tolitoli language.
4. The student known by the initials JA said that ethnoscience learning was easy to understand because Tolitoli is an everyday language.
5. Student NR stated that at first, all the ethnoscience learning material was quite confusing, but over time, it became very interesting.

B. Discussions

Ethnoscience allows for more meaningful science learning in student learning as long as it is integrated with strengthening local wisdom values that are built into students' learning behavior habits. Meaningful learning is learning that is packaged according to the characteristics of the learner. Learning that has meaning can also enable students to learn while doing "learning by doing in the form of real acts of love for their environment". When students learn by doing, they can find relevant relationships that produce comprehensive understanding, especially when they relate academic material to the context of their own lives (Barokah & Kamal, 2023; Wahyu, 2022).

According to Pertiwi & Firdausi (2019), the learning method recommended in the current context of science education in Indonesia is Ethnosains, which combines cultural elements and students' scientific knowledge. In addition, by implementing education based on participatory culture, students have the opportunity to make direct observations, which allows them to recognize scientific problems, explain scientific

phenomena, and draw conclusions about natural conditions and the impact of natural changes caused by human activities (Jiang et al., 2018). Therefore, there is a need for learning that is in direct contact with students' environment, such as ethnoscience learning which introduces and helps them become more connected with the natural, social and cultural environment. Providing skills, knowledge and understanding of their region that benefits students and society as a whole (Ke et al., 2021).

Ethnoscience can be recognized more easily through education that integrates aspects of daily life that are influenced by culture, including the processes, methods and content of these activities. The concept of culture referred to here refers to the symbolic patterns or structures and meanings that apply in society's social interactions (Berutu, 2024). Cultural knowledge will develop along with the development of reason and the dynamics of life (Whiten, 2023) which then evolves into various cultural characteristics such as folklore, traditional songs, traditional games, traditional architecture, traditional ceremonies, local production, and the use of natural resources. Concrete examples of ethnoscience education systems that must be sustainable in children's learning content at school.

Education is a means that can be expanded to educate about local wisdom in their environment and its values as a guide to life in various fields. A framework is needed that regulates the education system itself, one of which is designing a curriculum that uses ethnoscience-based approaches. The ethnoscience approach influences education in two ways: 1) good effects in the form of appreciation of local culture will develop when the content of the material taught at school is in accordance with students' everyday cultural understanding. This kind of teaching approach is known as inculturated learning; 2) Learning that places students as the main focus will be effective, because it facilitates the learning process through student assimilation and accommodation (Lestari & Fitriani, 2016; Reviandy Azhar Ramdhani et al., 2024). The role of science and learning in introducing knowledge based on cultural knowledge will provide protection for students from social, traditional isolation and traditional knowledge which is currently experiencing changes in values due to the impact of globalization and technology (Hermawan et al., 2024; Setyowati et al., 2023).

Ethnoscience encourages teachers and educational practitioners to teach science based on culture, local wisdom, and also problems that exist in society (Shidiq, 2021). This aims to ensure that students can understand and apply the scientific concepts learned in class in solving cultural problems and local wisdom values that they face every day, so that ethnoscience learning becomes more relevant and meaningful. This approach is in line with Minister of Education and Culture Regulation Number 24 of 2016 discussing Core Competency and Basic Competency standards at the Primary and Secondary Education levels, which determines standard abilities that must be achieved by students at the basic education level, including the ability to understand and apply scientific knowledge.

In ethnoscience which prioritizes local wisdom, traditional knowledge is considered an important source of information in understanding ecosystems and maintaining their balance. Research methods in ethnoscience often involve collaboration between scientists and local communities to investigate and gain new understanding about environmental awareness, medicinal plants, agricultural practices, and other aspects of traditional life (Altin et al., 2014).

Activities that constitute ethnoscience combine material with the surrounding local culture, according to the context (Puspasari et al., 2019). The argument that is urgently needed to adapt an ethnoscience approach is to help students achieve the results of Redevelopment through STEM (Science, Technology, Engineering, Art, and Mathematics) Learning, which involves the transformation of original science into scientific science (Khoiri & Sunarno, 2018). The main aim is to deepen overall understanding of the relationship between humans and their environment, while supporting efforts in conservation and sustainable development by taking into account locally owned knowledge and values. Meanwhile, literacy in question refers to the ability to apply an understanding of how intense competition works (Khairiyah, 2019).

Local wisdom values will help students understand every concept in the material so that the knowledge gained by students is not only limited to knowledge, but can also be implemented by students in the form of practice outside of school. Thematic learning based on local wisdom will be a connection in understanding students to act appropriately in facing the AEC. Civilization that not only demands that humans not only know everything but also be able to advance the country. In a study, Krisdayanti & Trisiana (2019) stated that it is important to revive Indonesian character so that learning not only leads to mastery of technology but also leads to the development of stronger local Indonesian potential and character.

The use of ethnoscience methods in learning is not only in accordance with the demands of the times and the principles of learning planning adopted at this time by Indonesian society, but also has the aim of inspiring a sense of love for the value of local wisdom. This is because cultural identity and nationalism support increasing students' understanding and knowledge regarding cultural diversity and local potential in their region (Oktaviana et al., 2024). Ethnoscience learning can hone students' skills in the ability to search for information, improve the ability to hone their minds critically and analytically, apart from that it can also encourage cooperation in solving problems related to the environment around them.

The implications of applying ethnoscience for effective learning activities at SDN 1 Nalu are significant because ethnoscience integrates local knowledge with formal scientific knowledge, allowing students to connect learning with their cultural and environmental contexts. At SDN 1 Nalu, the application of ethnoscience can enhance students' understanding of local wisdom values while developing scientific attitudes that are relevant to everyday life.

Of course, this is very appropriate in strengthening students' ethnoscience insights, especially through tourist visits to cultural heritage sites such as the burial place of King Tolitoli. This activity can be an effective means of instilling students' love and appreciation for cultural heritage in Tolitoli. By linking ethnoscience learning with local cultural sites, students not only learn about scientific concepts theoretically, but can also experience firsthand the connection between science and their culture.

Through visits to King Tolitoli's burial site, students can understand how the values of local wisdom, traditions, and history of the Tolitoli kingdom interact with their science and surroundings. This hands-on experience enriches students' insights by providing real and relevant cultural context, which helps them to see the importance of preserving historical sites and cultural heritage as part of scientific learning ([Asmayawati et al., 2024](#); [Pornpimon et al., 2014](#)).

In addition, the activity also supports the development of students' character, by fostering a sense of pride and responsibility for the preservation of local culture. This strengthens their understanding of the importance of maintaining cultural diversity and local values in a broader context ([Sakti et al., 2024](#)). In this way, tourist visits to cultural heritage can be an integral part of ethnosience learning that combines scientific knowledge and local culture, as well as increase students' appreciation of the cultural heritage that exists in Tolitoli.

This approach can also increase student motivation as the material taught becomes more contextual and meaningful to them. Furthermore, by integrating ethnosience into the curriculum, students can more easily grasp scientific concepts through their cultural perspectives, which in turn can strengthen their understanding of the scientific concepts being taught. Ethnosience-based learning can also stimulate students' critical and analytical thinking skills, as they are confronted with real-world problems that are relevant to their social and cultural conditions. Overall, the implementation of ethnosience at SDN 1 Nalu can contribute to more meaningful learning, reduce negative perceptions of science, and support the development of students' character and cognitive skills.

CONCLUSIONS

Effectiveness of Ethnosience Learning by combining local wisdom values in natural science learning at SDN 1 Nalu which is usually integrated in natural science learning, students can achieve a more complete understanding of scientific concepts but also develop a sense of belonging and pride in their local environment. The results of the research show that the use of ethnosience learning at SDN 1 Nalu can improve not only students' understanding of ethnosience concepts but also influence the development of ethnosience critical thinking skills, scientific attitudes, and local wisdom characters that come into contact with scientific phenomena and the environment around students. The application of ethnosience learning in natural science subjects is also the right step to enrich students' science learning experience while strengthening their love for their regional locality because its integration is expected to help strengthen students' love for their regional identity wisely and wisely, develop a sense of belonging to the culture and their local traditions while gaining scientific knowledge relevant to the surrounding environmental context. Thus, the application of ethnosience learning at the elementary school level not only has the potential to improve the quality of natural science learning, but also to form a strong character and have a deep understanding of the nation's cultural values. Therefore, it is hoped that future research that is relevant to the results of this

research can provide a deeper understanding of natural science learning which is rooted in strengthening the value of local wisdom among students.

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