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Integration of Social Science Learning Through A Child-Friendly Ethnoscience Approach

Novi Yuliyanti*, Sarwi Sarwi, Sri Wardani, Siti Fathonah

Post Graduate School, Universitas Negeri Semarang, Semarang, Indonesia

*Corresponding Author: noviyuliyanti61@students.unnes.ac.id

Abstract. Child-friendly education in elementary schools is not just about transferring knowledge or content. The rapid development of science and technological advances will have major consequences. Not only are the needs of society changing, but it also becomes a vehicle for internalizing character that originates from the values and culture of society. This concept gives rise to logical consequences, namely that every learning process, whatever the topic, must integrate cultural values as character education content, including social studies and science learning. One of the cultural elements that can be integrated in social studies and science learning is ethnoscience (indigenous public science) which is child-friendly for elementary school students. Ethnoscience is an original science (a community's knowledge system). Analysis of the literature shows that the integration of the ethnoscience approach can help the process of learning social science for students in elementary schools by paying attention to their special needs, facilitating the development of critical thinking and problem-solving skills, and enriching the learning experience through the integration of local, traditional, and contextual knowledge. However, the challenges in integrating this approach, such as a deep understanding of students' cultural diversity and the development of relevant curricula, also need to be considered. Taking these findings into account, further research can develop strategies and best practices in implementing an ethnoscience approach in science learning in elementary schools, creating a meaningful learning environment for all students.

Keywords: social and science (IPAS), ethnoscince, child-friendly

INTRODUCTION

Educational institutions are a forum for forming and developing national character and producing an intellectual generation. Every society has its own concept of humans, and to become humans as conceptualized by society is the task of education to make it happen. This implies that, one of the functions of education is as a process of internalization and inheritance of society's cultural values to create humans as conceptualized by that society. Through the use of an ethnoscience approach given to students as an effort to optimize science and science learning that is integrated with the surrounding environment. By using an ethnoscience approach, it is hoped that it will be able to create meaningful learning and enable students to learn by doing (Alvonco, 2014).

Science and science learning has become a new paradigm in the independent curriculum. All instruments and integrated teaching materials that include science and social studies studies are not yet ready, so the focus of learning is often split into two. As has been determined in the independent curriculum, the teaching materials presented by students must be appropriate to the geographical conditions of the student's school location. In the science and science learning process, teaching materials are still used separately between science and social studies lessons. The education curriculum often changes and will never be separated from the evolution of digitalization in adapting to current developments in Indonesia, so teachers must understand this as a strong foundation for implementing education towards global developments, especially in education (Angga, et al, 2022). Curriculum development in Indonesia starting from the 1952 curriculum to the 2013 curriculum is an effort to improve the quality of education. In adapting to these changes, the conditions of teachers and students are not suitable when changing the concept of the educational curriculum so that a new idea for the curriculum is needed because the curriculum system is too monotonous to provide independence and creativity to teachers and students.

To achieve national education goals, changing the 2013 Curriculum towards the Independent Curriculum is an important step. Periodic curriculum development is adjusted to advances in technology, information and science (Santoso, 2020). Studies related to the development of ethnoscience-based science and science teaching materials for child-friendly schools can provide valuable insight into the use of the surrounding environment and local wealth that can be presented as learning material for elementary school students in child-friendly schools. Ethnoscience-based learning is based on a

fundamental recognition of Indonesian culture. Fundamental recognition of culture is essential and fundamental to education and the development of knowledge. Sayakti (2003) stated that the importance of learning with the support of teaching materials that are integrated with culture will have a good impact on the learning process and learning will be more meaningful. The value that has increased for each student illustrates that the ethnoscience module is able to increase students' motivation in learning, so that

Students are able to achieve results according to their abilities. The formation of knowledge is based on constructivism, namely viewing a subject as actively constructing cognitive structures (understanding and knowledge) in its interaction with the environment. Based on a social constructivist perspective, students' initial knowledge obtained from their daily experiences and culture can be used as raw material to build knowledge. So it can be concluded that the ethnoscience-based science module material on theme 5 Ecosystem Subtheme 1 is declared complete and effectively used in increasing students' understanding in the high level category (Schunk, 2012). The importance of ethnoscience learning (Sudarmin, 2015) is that the first ethnoscience research focuses on culture. Ethnoscience-based learning is offered in the implementation of learning because it is appropriate to the learning implementation process. This is useful for overcoming students' learning difficulties in receiving abstract learning by involving interesting learning experiences.

One of the cultural elements that can be integrated into science learning is the community knowledge system or what is known as ethnoscience. Science is knowledge which is a collection of knowledge obtained systematically using scientific methods. Meanwhile, social is community knowledge as a socio-cultural construction obtained in various ways, both scientific and non-scientific. This difference does not necessarily mean that the two must be opposed. Even though learning at school contains scientific knowledge, the background of students who are members of a certain society reflects their initial knowledge which is formed from the original science of their community, so that bridging original science and scientific science can provide more understanding for students. Therefore, integrating ethnoscience in learning is important.

Several benefits can be analyzed from the integration of ethnoscience in science learning, namely: (1) students can learn about the native science of their community, this means that the process of cultural socialization can take place in learning; (2) by knowing the process of forming IPAS, students can integrate science and social studies learning packaged with IPAS in accordance with the ethnoscience approach; (3) by knowing science, students can identify the potential of original science to be developed into scientific science; (4) students can understand scientific science more easily with examples from the surrounding environment which are a form of science native to their community. The integration of ethnoscience into learning can be done using various models which will be explained further in this article.

This study aims to explore the concept of ethnoscience approach in learning Natural and Social Sciences (IPAS) at the elementary school level. By involving a comprehensive literature review, this study aims to gain a better understanding of the concept of ethnoscience, its application in the context of elementary education, and its impact on the learning of IPAS in elementary school students from diverse cultural and social backgrounds.

The ethnoscience approach emphasizes the importance of integrating local, traditional, and contextual knowledge in science learning, which is in line with efforts to create an inclusive and relevant learning environment for all students. By acknowledging and valuing diverse cultural perspectives in teaching IPAS, this approach can provide opportunities for students to be more actively involved in learning, as well as help them understand how science relates to their everyday realities.

Through an in-depth literature review analysis, this study will explore various aspects of a child-friendly ethnoscience approach in the context of elementary education, including appropriate teaching methodologies, effective learning strategies, and practical implications for curriculum development and teacher skill enhancement. It is hoped that the findings of this study will provide valuable insights for educational practitioners, researchers, and policy makers in their efforts to improve students' science literacy at the elementary level with an inclusive and sustainable approach.

METHODS

With the Systematic Literature Review (SLR) method, this study will follow a systematic

process to collect, critically test, integrate, and synthesize the results of various research studies related to the ethnoscience approach in science learning in elementary schools (Muzakki & Putri, 2023). The following are the stages that will be carried out in the SLR for this study:

a. Determination of Research Theme: The initial stage in the SLR is to determine the research theme to be studied. In this case, the research theme is a child-friendly ethnoscience approach in science learning in elementary schools.

b. Search for Relevant Articles and Journals: The study will search for relevant articles and journals through various sources such as academic databases (eg, Google Scholar, PubMed) using keywords that are in accordance with the research topic, such as "ethnoscience", "science learning", "child-friendly schools", "elementary schools", and so on. The use of tools such as "Publish or Perish" can help in finding relevant articles.

c. Article Selection and Evaluation: After collecting a number of relevant articles and journals, the next step is to evaluate the quality and relevance of each article. Inclusion and exclusion criteria will be set to ensure that only articles that meet certain criteria are included in the literature review.

d. Identification and Analysis of Findings: After the relevant articles have been selected, the study will identify the key findings from each article. These findings will be critically analyzed to understand how each article contributes to the understanding of the ethnoscience approach in primary school science learning.

e. Synthesis and Interpretation: The final step in the SLR is to synthesize the findings from the evaluated articles and translate them into a comprehensive understanding of the research topic. This involves grouping the findings into broader themes, identifying patterns, knowledge gaps, and practical implications of the findings.

By following these steps, this study will be able to produce a comprehensive and detailed literature review of the child-friendly ethnoscience approach in primary school science learning. The results of this literature review will help form a theoretical and methodological foundation for further research on this topic, as well as provide valuable insights for education practitioners, researchers, and policy makers.

RESULTS AND DISCUSSION

Basic Concepts of Ethnoscience

The essence of science learning is that it can stimulate students to be able to have the ability to think, solve problems using scientific methods,

and imitate the way scientists work in discovering new facts. Ethnoscience is an activity to transform society's original science with scientific science. Indigenous science is reflected in local wisdom as an understanding of nature and culture that develops among society. The meaningfulness of science and science learning integrated with ethnoscience will stimulate a person's contextual knowledge and be friendly to regional culture. This is in accordance with the opinion of the cultural background brought by teachers and students into science and science learning is very determining in creating a meaningful and contextualized learning atmosphere.

The process of building scientific knowledge that integrates ethnoscience or traditional knowledge has developed in Canada, America, South Africa and Germany as a vehicle for enriching knowledge and scientific literacy for their communities (Duit, 2007). Building science through ethnoscience allows students to show the depth of their thinking, their enthusiasm for the concepts or principles being studied, as well as their creative imagination in expressing their understanding. Learning science through ethnoscience can be done at all levels of education starting from elementary school, middle school or college, and in any subject.

As a learning strategy that encourages imaginative processes, critical thinking, creative thinking, and also cultural awareness, ethnoscience-based learning is also a form of multiple representation of learning assessment or a form of assessing understanding in various forms. In this ethnoscience-based learning, students do not need to take tests to explain about global warming which is associated with the culture of burning limestone or the nitrogen cycle in nature which is associated with the culture of making salted eggs, for example, but students can make posters, make paintings, songs or poetry. which describes these processes. By analyzing the products produced by students, teachers/lecturers can assess the extent to which students have a deep understanding of the global warming process or the nitrogen cycle. Thus, ethnoscience-based learning can be used as a means of exploration for students and educators in achieving understanding and achieving understanding rationally and educators play the role of guiding and directing students' potential to explore various cultures that are already known in accordance with the learning topic, as well as developing these cultures in later.

Table 1. Literature Review Results

Citation	Article Title	Results
Ethnoscience approach in learning science and social		
Sumarni et al (2017).	Chemical literacy of teaching candidates studying the integrated food chemistry ethnosciences course	The chemical literacy achievement of prospective teacher students in the content domain is at 31.8%; in the process domain, they scored 3.20, 2.26, and 2.95 out of a maximum score of 5.0 for identifying scientific evidence, evaluating and designing scientific investigations, and recognizing scientific problems. Therefore, it is highly recognized that prospective teachers still have inadequate chemistry literacy. Findings from research on students' explanations of specific chemical concepts, most of which indicated partially correct answers, are also consistent with the achievement of chemical literacy among preservice teachers.
Sumarni & Yulianti. (2019)	Developing Students' Entrepreneurial Characters through Downstreaming Research on Natural Product Learning with Ethnoscience	(1) The resource person for essential oil refining and batik making has a correct understanding of the science; (2) Based on the results of the research and discussion, it can be concluded that: (2) An essential oil learning model using the STEM approach has been found; and (3) Application of the model provides ethnically integrated results. Zie batik has produced six chemical batik motif printing machines with various chemical structures, making it suitable for making motifs and creating profitable chemical batik fabrics. Based on the findings, the natural culture and creativity learning paradigm can foster creativity, innovation, perseverance and a sense of national identity.
Qori et al (2020).	Implementation of STEM Integrated Ethnoscience-based Vocational Science Learning in Fostering Students' Higher Order Thinking Skills (HOTs).	Based on the indications of analyzing (C4), assessing (C5), and creating (C6), the research results show that the HOTs profile of vocational school students is 73.3%, 71.5%, and 67.8%. Based on the results of the t test, namely t 2.08, t table: 2.00, dk: 72, ŷ: 5%, and tcount>ttable, H0 is rejected and H1 is accepted, which shows that integrated science learning based on STEM ethnoscience is useful in increasing the HOT of vocational school students. the contribution of STEM literacy to the investigation of ethnoscientific knowledge sources.
Dewi et al (2021).	The effect of contextual collaborative learning based ethnoscience to increase student's scientific literacy ability.	The data shows an increase in the moderate category for overall student achievement in science content, methods and attitudes. This indicates that students' attitudes, procedures and materials are influenced by the ethnoscience-based contextual collaborative learning approach in terms of their scientific literacy.
Yuliana et al (2021).	The Effect of Ethnoscience-Themed Picture Books Embedded Within Context-Based Learning on Students' Scientific Literacy.	According to the findings, fifth grade students' science literacy improved more with EthCBL compared with standard instruction. After the intervention, the experimental group outperformed the control group on all science literacy subscales in the posttest.
Zidny & Eilks	Learning about pesticide use	This lesson also offers students the opportunity to learn green and sustainable content

Citation	Article Title	Results
(2022).	adapted from ethnoscience as a contribution to green and sustainable chemistry education.	(Model 2) inspired by ethnoscience, such as aspects of the value of sustainable chemistry practices of the Baduy indigenous community towards the use of green pesticides from natural products. Implementation and combination The use of Models 1 and 2 in learning design can be a promising strategy for achieving the broad range of ESD objectives in chemistry education. This can help students to understand and access the sustainability issues behind chemistry in the context of everyday life
Winarto et al (2022).	Developing a Problem-Solving Essay Test Instrument (PSETI) in the Instruction of Basic Science Concepts in Ethnoscience Context.	The results of the development of the PSETI instrument show that 19 items meet the validity and reliability of the 21 items/composed. PSETI is an essay test with assessments using a partial credit model based on three categories of polytome data. The reliability of the instrument is 0.77 and it is concluded that the instrument is good for measuring the problem-solving abilities of prospective teachers in science learning in an ethnoscience context.
Solheri et al (2022).	Analysis of ethnoscience integrated environmental literacy for junior high school	Research findings show that middle school students' integrated ethnoscience environmental literacy obtained an average score of 61 (with a range of 100). The environmental literacy parameter achievements of ecological knowledge, cognitive skills, attitudes and behavior are 48, 29, 73 and 71 respectively, while the results of the analysis of integrated ethnoscience environmental literacy provide an illustration that on average junior high schools have implemented ethnoscience integration in the environment. literacy well. Very empowering knowledge and attitudes contributing to students' environmental literacy.
Khusniati et al (2023).	Indigenous science constructs based on Troso woven fabric local wisdom: a study in ethnoscience and ethnoecology.	In the process of making Troso weaving, the results of the reconstruction of original knowledge into scientific knowledge were examined. Based on ethnoscience studies, various scientific studies have been obtained, especially those related to measurement processes, compounds and mixtures, heat and energy transfer. Ethnoecologically, the community does not yet know the environmental impacts that occur thus causing environmental damage even though people do not observe it directly. By linking science material to local culture, it is hoped that understanding science will become more meaningful and contextual. Students will also try to better protect the environment by knowing the impact of human behavior
Sudarmin et al (2023)	Chemistry project-based learning for secondary metabolite course with ethno-STEM approach to improve students' conservation and entrepreneurial character in the 21st century.	The project-based chemistry learning model in the secondary metabolites of essential oils and terpenes courses as well as learning tools using the Ethno-STEM approach are feasible and effective for improving the conservation and entrepreneurial character of students with medium and high criteria based on the N-gain score. Entrepreneurial character which includes perseverance, discipline and creativity is developed so that students can produce chemical batik products that are attractive and suitable for sale.

Science and Social Learning in Elementary Schools

Learning design is a systematic process, based on educational theory, learning strategies, and specifications to promote quality learning experiences (Mustaro, et al., 2017). Learning design development is based on the selection of organized sequential components, information, data and theoretical principles at each stage. Design products are tested in real world situations either during development or at the end of the development process (Gredler, 2001).

Learning design can also function as a procedure for developing educational and training curricula consistently and reliably (Branch & Merrill, 2012). Learning design development is a complex process that is creative, active, and iterative (Gustafson & Branch, 2002), and designed systematically to ensure the quality of learning implementation (Kurt. S, 2017).

IPAS is a combination of IPA and IPS. In terms of content, IPAS is very close to nature and human interactions. Science and science learning needs to present a context that is relevant to the natural conditions and environment around students (Tim, 2021). IPAS also plays an important role in forming literacy and numeracy competencies. Currently literacy and numeracy are generally understood to be only related to Indonesian and Mathematics. Therefore, it is necessary to develop IPAS which can be linked to literacy and numeracy. In this way, students can be helped in understanding the content and context of science subjects, strengthen their mastery of literacy and numeracy and become life skills in everyday life.

Integration of Ethnoscience in Natural Science Learning in Elementary Schools

Referring to the previous explanation, it indicates that there are two types of science discussed in this article, namely genuine science (ethnoscience) and scientific science (IPA). The relationship between the two can be traced in ethnoscience integrated science learning, as one of the essences of education as a vehicle for socialization and internalization of cultural values. This concept then has an influence on the field of education by integrating indigenous science into science learning (Aikenhead & Michell, 2011), namely learning that combines culture with science (Mayasari, 2017). Therefore, from a learning perspective, ethnoscience can be interpreted as a strategy for creating a learning environment and designing learning experiences that integrate culture as part of the science learning process (Khoiri & Sunarno, 2018). According to Joseph, 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 (Pertiwi1b & Firdausi1a, 2019). If we refer to ethnoscience as a community knowledge system which is an element of culture, then the integration of ethnoscience in learning can be traced based on the form of culture itself, namely ethnoscience as a cultural system, ethnoscience as an activity and ethnoscience as an object (artefact). Ethnoscience as a cultural system containing the values, ideas, rules and norms of a society is very appropriate if integrated into the development of students' character.

Ethnoscience as an activity can be integrated in the form of developing learning tools to increase scientific literacy (Kriswanti & Supardi, 2020), student worksheets (Indrawati, 2017; Sholikhah & Sudibyo, 2021; Wijayanti et al., 2022), learning methods namely the practicum method simple ethnoscience-based learning (Fitri & Syukur, 2022), ethnoscience-based online project based learning (Rahayu & Ismawati, 2022), ethnoscience-based learning approach (Sani, n.d.) to improve students' process skills, as well as a problem-based learning model for students' ability to understand concepts (Lidyawati, 2021; Rosidah, 2018), as well as developing learning models to improve students' critical thinking abilities (Arfianawati et al., 2016; Sari et al., 2021) as well as students' learning interests and achievements (Shidiq, 2016). Ethnoscience as an artifact can be integrated in the form of developing teaching materials (Arifah & Zainuddin, 2022; Intika & Jumiati, 2020) in the form of textbooks (Puspaningtyas, 2018) to improve students' science process skills, modules for process skills (Ni'mah, 2022) and scientific literacy (Dian, 2022), and understanding concepts (Puspaningrum et al., 2022), as well as learning media to increase students' interest in learning (Akbar et al., 2022).

Journal Reduction

From several journals collected and reduced, 10 Google Schoolar indexed articles in the last 5 years were selected that were related to ethnoscience. Ethnoscience means that the relationships that form the phenomenon of science education as a cultural reconstruction of real social elements and the conditions of the socio-cultural context that underlie them are used as sources of

information and learning in constructing the dimensions of science for students themselves. The dimensions of science in question are processes, products, applications and attitudes that can be developed in science learning by using local culture and wisdom as learning resources.

The results of the research data are in the form of a literature review that analyzes and summarizes the Ethnoscience Approach to Natural Science Learning in Elementary Schools. Table 1 which explains the literature review carried out on various research studies related to the ethnoscience approach in learning Natural and Social Sciences (IPAS) in elementary schools provides an in-depth understanding of the concepts, practices and implications of this approach in the context of basic education. By collecting, critically examining, integrating, and synthesizing results from various research studies, we can summarize key findings that can provide valuable insights for the development of best practices in efforts to increase inclusive science literacy at the elementary level.

One of the key findings in this literature review is the implementation of literacy movements for children with special needs in elementary schools that provide inclusive education. A study conducted by Agustin & Wiratama (2021) highlights the importance of paying attention to students' special needs in developing inclusive scientific literacy. In this context, an ethnoscience approach can be a relevant strategy to ensure that all students, including those with special needs, can access and understand science concepts well. By integrating local, traditional and contextual knowledge in science learning, the ethnoscience approach can help create a supportive learning environment for all students, without exception.

In addition, research by Safitri & Putra (2022) highlights the influence of the Science Literacy Circles (SLC) method based on scientific literacy on students' problem solving abilities. These findings indicate that a scientific literacy approach using a scientific approach can effectively improve students' problem solving abilities in the context of science learning. This approach reflects ethnoscience principles which emphasize the importance of relating scientific concepts to students' everyday experiences and realities, as well as encouraging students to be actively involved in the learning process.

Furthermore, a study by Dewi et al. (2021) tested the effect of ethnoscience-based contextual collaborative learning on increasing students' scientific literacy skills. The results of this research indicate that ethnoscience-based learning can effectively improve students' scientific literacy skills through a collaborative approach that takes into account students' cultural and social context. This underscores the importance of paying attention to local and cultural contexts in curriculum development and science learning practices, and emphasizes the potential of ethnoscience approaches to enrich students' learning experiences.

Not only that, a study by Cleopas (2023) highlights the prospects and challenges in inclusive science education. This research emphasizes the importance of integrating ethnoscience approaches in efforts to create inclusive and relevant learning environments for all students, including students from diverse cultural backgrounds. These findings underscore the need for awareness and deep understanding of cultural diversity in designing effective science curriculum and learning strategies.

Apart from these findings, the literature review also shows that there are efforts to develop inclusive scientific literacy through various innovative methods and approaches. For example, research by Sumirah, Arsyad, & Sukarno (2023) explored the role of Islamic Religious Education teachers in developing students' scientific attitudes and scientific literacy. This study underlines the importance of religious education in forming critical scientific attitudes and comprehensive scientific literacy, and shows that science education can be enriched through the integration of religious values in the curriculum.

On the other hand, several studies also highlight the development of scientific literacy through the use of technology and digital media. For example, Muzijah, Wati, & Mahtari (2020) developed an e-module using the Exe-Learning application to train students' scientific literacy. The results of this research show that the use of technology in learning can increase student interest and involvement in understanding science concepts, while facilitating learning accessibility for all students.

In addition, several studies also highlight the importance of integrating ethnoscience approaches in the development of science curriculum and learning strategies. For example, research by Khusniati et al. (2023) explored the construct of indigenous science based on the local wisdom of the Troso cloth. This study shows that local and traditional knowledge can be a valuable resource in science learning, and underscores the importance of taking ethnoscientific perspectives

into account in designing curricula that are relevant and effective for all students.

The literature review also highlights the importance of developing students' critical thinking and problem solving skills through science learning. The study by Qori et al. (2020) explored the implementation of project-based science learning with an ethnoscience approach in improving students' higher-order thinking abilities. The results of this research indicate that the ethnoscience approach can effectively facilitate the development of students' critical thinking and problem solving skills through project-based and contextual learning experiences.

CONCLUSION

From this literature review, we can conclude that the child-friendly ethnoscience approach has great potential in elementary school students' science learning by taking into account their cultural and social contexts. However, the challenges in implementing this approach also need to be recognized and addressed in order to achieve inclusive and meaningful science learning for all students. By developing strategies and best practices based on these findings, educators and policymakers can strengthen the child-friendly ethnoscience approach in elementary school science learning to create a learning environment for all students.

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