

Needs Analysis of Ethnoscience-Based Digital Teaching Materials for Grade IV Elementary School Students

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ABSTRACT

Learning that raises local culture to be a subject of science learning can improve students' mastery of science literacy, character, motivation and interest. This study aims to analyze the needs of ethnoscience-based digital teaching materials in elementary schools. This type of research is descriptive qualitative, namely by analyzing needs. This research was conducted in class IV of SDN located in East Karawang District, Karawang Regency. The data collection techniques used were interviews and observations. The results of this study indicate that: 1) Ethnoscience-based digital teaching materials at the school have never been developed; 2) There is a great need for ethnoscience-based digital teaching materials on plant material sources of life on earth; 3) Ethnoscience-based digital teaching materials really need to be developed in learning grade IV science on plant material sources of life on earth.

INTRODUCTION

Science learning aims for students to have science process skills. In developing these science process skills, students are indirectly trained to develop multiple intelligences. If using a more comprehensive point of view, science is seen as a way of thinking (a way of thinking) to gain an understanding of nature and its properties, a way of investigating (a way of investigating) how natural phenomena can be explained, as a body of knowledge (a body of knowledge) resulting from curiosity (inquiry) (Wijaya, 2018).

Students should be encouraged to understand that science can be used to explain what is happening, predict how something will behave, and analyze its causes. Natural science education at primary level will contribute significantly to the whole process of children's education and further individual development (Putri et al., 2022).

In science learning at school, the ability to link science knowledge with surrounding phenomena contextually can be obtained through ethnoscience. Ethnoscience can improve students' thinking skills and science generic skills by utilizing local cultural aspects in learning. Learning that raises local culture to be used as an object of science learning can improve students' mastery of science literacy, character, motivation and student interest (Putri et al., 2022).

Science education can be developed based on the uniqueness and uniqueness of a region so that students do not see science as a foreign culture to learn but as part of the culture and local wisdom of the area where they live (Sulistri et al., 2020).

According to Sudarmin, it is suggested that education in Indonesia should be able to use the ethnoscience scientific approach, which is an original knowledge in the form of language, culture, morals, customs, and technology contained in certain communities or people that have elements of scientific knowledge (Puspasari et al., 2019).

Grade IV primary school students come from various cultural, ethnic and environmental backgrounds. Understanding students' cultural and environmental contexts is important in designing teaching materials that are relevant and interesting to them. Primary school students have accumulated a lot of life experiences and local knowledge from their surrounding environment.

Students' active involvement in learning is essential to improve their understanding. Ethnoscience-based digital teaching materials can increase student engagement in linking learning materials with everyday life.

According to Piaget (in Putri et al., 2022) cognitive development in elementary school age children can distinguish mathematical symbols but cannot yet deal with abstract things. Physically, elementary school children like to play, so that a pleasant learning atmosphere will facilitate understanding. The use of teaching materials that are in accordance with the character of students will be able to help teachers create comprehensive learning so that they can achieve the planned learning objectives. Along with technological advances, the world of education is progressing rapidly and has a positive

impact, especially in learning. This technological development creates many sophisticated and interesting teaching material innovations. So that with these developments, students can learn anywhere, anytime and with anyone according to their needs and desires. Teaching materials are one of the most important components of learning support. Teaching materials consist of various forms, there are printed teaching materials, audio teaching materials, audio-visual teaching materials and interactive teaching materials. However, most of those used in schools are limited to printed teaching materials only. Whereas other forms of teaching materials such as interactive teaching materials are more effectively used in learning (Afriyanti et al., 2019). Likewise, inserting local wisdom as a means of learning science has not been done much in schools so that from the background above, researchers are interested in learning science.

Based on the above background, the problem formulation proposed in this study is how to analyze the needs of teaching materials according to teachers, and how to design teaching materials in accordance with the analysis of student needs. The urgency of this research is the development of science, namely ethnoscience-based teaching materials developed to help students be interested in natural science and are expected to help students learn natural science with fun.

LITERATURE REVIEW

Ethnoscience etymologically comes from the word "ethnos" from Greek which means "nation" and "scientia" from Latin which means "knowledge". Ethnoscience more or less means the knowledge possessed by a nation or more precisely an ethnic group or a particular social group (Sudarmin, 2015).

Ethnoscience is learning from a cultural perspective related to natural phenomena (Kantina et al., 2022). Ethnoscience is a strategy for creating learning environments and designing learning experiences by integrating cultures that enable learners to learn by doing (Wahyu, 2017). Meanwhile, according to Fahrozy et al.,(2022) states that ethnoscience is a field of ethnoscience that seeks to understand how indigenous peoples understand nature. Ethnoscience is closely related to nation or culture and science or science (Senjawati, 2020).

Indigenous science knowledge consists of all knowledge that alludes to community facts (Nelmi & Amini, 2023). Indigenous science is reflected in local wisdom as an understanding of nature and culture that develops among the community (Dinissjah et al., 2016).

Students learn to connect the material learned in class with the context of their lives and the link between science and technology. Ethnoscience knowledge comes from beliefs passed down from generation to generation. Thus, ethnoscience-based learning is learning that guides students in discovering and building their own knowledge by using knowledge that is uniquely owned by a community (Khoerunnisa et al., 2012). Ethnoscience-based learning also needs to be applied to elementary school education.

Ethnoscience as cultural knowledge also teaches children to be tolerant to fellow friends who have different cultural backgrounds. The noble culture inherited from our ancestors will gradually disappear as foreign cultures are transformed by electronic media. It is hoped that with the role of education in instilling ethnoscience insights, students will have a broader knowledge of the surrounding environment and avoid alienation from their environment (Akmal et al., 2020). Aza Nuralita (in DS et al., 2022) stated that ethnoscience raises local culture and wisdom to be used as learning objects so as to make learning more meaningful.

Teaching materials are one of the learning resources that play an important role in the learning process (Sarini & Selamet, 2019). Ethnoscience-based science teaching materials are teaching materials that contain indigenous knowledge in the form of local community wisdom which is then transformed into scientific knowledge. Learning science by using ethnoscience-based teaching materials will make students more interested and enthusiastic about learning (Damayanti et al., 2017). This learning aims to introduce students to facts or phenomena that develop in a society that can be associated with existing scientific science materials as science (Ahmadi et al., 2019). Teaching materials help learners understand the relationship between indigenous science (ethnoscience studied) and scientific science (Risamasu et al., 2023).

So it can be concluded that ethnoscience-based digital teaching materials are a form of integrating subject matter with local culture or life in the surrounding environment. The use of digital teaching materials makes the book look attractive, communicative, and interactive because of the delivery of material in the form of text, images, learning videos, and practice questions. So far, science learning is only a material that contains facts to be memorized. The characteristics of digital teaching materials that are systematic, coherent and able to make science material that is a lot of memorization is very suitable for use today given the challenges of learning in the 21st century.

METHODOLOGY

Qualitative research is natural research and the data produced is descriptive. The data used in this research is primary data (Adhimah, 2020). The type of research used is qualitative research design. Qualitative research is research that creates findings that cannot be processed using statistical procedures or quantitatively (Permatasari & Desstya, 2022).

The instrument used consists of analyzing the needs of student teaching materials according to the teacher. The needs analysis instrument is used to obtain data information on students' needs for teaching materials on certain materials, especially in science subjects. Data analysis in this study used an instrument to analyze the needs of student teaching materials according to teachers. At this stage an interview was conducted with one of the class teachers in elementary school. There are 13 questions compiled on the teaching material needs analysis instrument.

RESEARCH RESULT AND DISCUSSION

The research was conducted in a public elementary school in the East Karawang area, which is one of the A accredited elementary schools. Based on the data reduction of the interview results of the fourth grade teacher in East Karawang, the following results are known:

Table 1. Interview Results of Grade IV Teachers at Public Elementary Schools in East Karawang

No.	Aspect	Indicators	Answers
1.	Use of teaching materials	1. Have you used teaching materials in the IPAS subject?	Yes
		2. Have you used digital teaching materials in learning science on plant material sources of life? If you have used what type of teaching materials are used?	Yes, teaching materials are still conventional instead of digital such as textbooks.
2.	Problems in using teaching materials	3. In using teaching materials do you experience any difficulties? If there are difficulties or problems faced in using existing teaching materials?	The difficulty is because there is only one teaching material, so the delivery of learning materials is less diverse.
		4. How often do you use teaching materials?	Yes, I often use textbook teaching materials.
		5. How do you get these teaching materials used in classroom learning?	The teaching materials used are textbooks from the government.
		6. Do the existing facilities and infrastructure support the use of teaching materials that you use during classroom learning?	Facilities and infrastructure support
3.	Potential that supports the development of teaching materials	7. Do you know digital teaching materials with the help of the bookcreator application?	Yes, I know
		8. In your opinion, is the use of digital teaching materials with the help	Yes, required

	of the bookcreator application needed in learning science material on plant sources of life on earth?	
9.	Do you think the use of teaching materials that have been used so far is appropriate in conveying plant material sources of life on earth?	Not appropriate because students tend to be passive
10.	Do you understand ethnosience?	Not quite understanding
11.	Are the teaching materials used ethnosience-based?	Not yet based on ethnosience
12.	Are the teaching materials that you have been using ethnosience-based?	Yet
4.	The need for digital teaching materials to study plant material sources of life on earth	13. Do you think it is necessary to develop ethnosience-based digital teaching materials? Yes, it is very necessary because it is very suitable for the age of digitalization and can make it easier for students to learn the material.

Based on the results of interviews obtained from fourth grade teachers of public elementary schools in East Karawang District, it is stated that ethnosience-based digital teaching materials that attract students so that students more easily understand the material. Learning that has been done is only in the form of one teaching material in the form of a packet book from the government so that it has an impact on students' understanding of the material. Teaching materials used by fourth grade teachers are still conventional and not digital. Given the era of digitalization, where students are no stranger to technology. Therefore, it will be very suitable to develop ethnosience-based digital teaching materials on the material of plant sources of life on earth. Because with digital teaching materials assisted by the bookcreator application, students will be more active and interested because the application used is more interactive.

CONCLUSIONS AND RECOMMENDATIONS

This research focuses on analyzing the needs of ethnosience-based digital teaching materials in the material of plant sources of life on earth in class IV in elementary schools. Based on the results of the study, it can be concluded that students and teachers stated that there is a great need for the development of digital teaching materials with the ethnosience-based bookcreator application

on plant material sources of life on earth. Through digital teaching materials assisted by the bookcreator application, it is hoped that students will be more active and easy to understand the material.

ADVANCED RESEARCH

This research still has limitations so it is necessary to carry out further research related to the topic " Needs Analysis of Ethnoscience-Based Digital Teaching Materials for Grade IV Elementary School Students" to perfect this research, as well as increase insight for readers

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