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ONTOLOGICAL AND AXIOLOGICAL VIEWS ON ETHNOSCIENCE IN RASI

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Abstract: *Massive infiltration of foreign cultural influences can threaten the existence of the Indonesian nation's heritage of cultural wisdom. It is necessary to have a learning process that can preserve the culture of our ancestors. One suitable approach for such learning is ethnoscience. Ethnoscience bridges the gap between the natural sciences handed down through generations from ancestors and the scientific knowledge taught in schools. This research aims to analyze the ontological and axiological views of learning with an ethnoscientific approach related to the rasi in junior high school. This study is qualitative research using a literature review. Data collection techniques involve collecting data from books, journal articles, and popular scientific articles. Rasi is a staple food practice for food security in the indigenous people of Kampung Cireundeu, made from cassava (Manihot esculenta). In the process of making rasi, there are scientific concepts that can be integrated into junior high school science learning based on ethnoscience, covering topics such as the Classification of Organism, Simple Machines, Separation of Mixtures, Heat, Physical Changes, Force, Pressure, Nutrition, and Efforts to Maintain Body Health. The ethnoscientific approach supports the achievement of 21st-century skills, including critical thinking, creative thinking, collaboration, communication, character, and citizenship.*

INTRODUCTION

Indonesia is an archipelagic country rich in natural beauty and diverse cultures. With over 1300 ethnic groups, Indonesia boasts diversity in language, customs, traditional foods, games, and arts. Despite these differences, the nation adheres to the principle of unity in diversity, encapsulated in the motto "Bhinneka Tunggal Ika" (Unity in Diversity).

In this digital era, information is easily accessible. With gadgets at our fingertips, we can quickly seek information from various parts of the world. Unfortunately, this ease of access has led to the infiltration of foreign cultures into Indonesia. Nowadays, finding young people who know K-pop songs is more accessible than their regional tunes. This phenomenon raises concerns about the erosion of the original cultures of Indonesia's ethnic groups, ultimately diminishing nationalistic sentiments. Therefore, there is a need for an educational role that functions to preserve, develop, and build culture and civilization. It does not imply avoiding technology altogether; education makes participants aware of using

technology wisely. This awareness aims to enhance their love for their homeland and nation.

Additionally, the evolving job market demands high-level skills. Employment opportunities require individuals capable of learning, reasoning, thinking creatively, making decisions, and solving problems. Due to the challenges students face in the 21st century, learning needs to integrate local culture to equip students with the necessary skills. These 21st-century skills include critical thinking, creative thinking, communication and collaboration, character, and citizenship [17].

Teachers must design learning experiences that bring students closer to their surroundings and daily lives. Typically, teachers only use the environment's potential as an introduction without delving into deeper discussions about local wisdom. However, the socio-cultural environment of students needs to be explored further so that students realize the knowledge they acquire in school is helpful in their lives, making learning more meaningful. In science learning, meaningful learning activities can be achieved through an ethnoscience approach [26].

Ethnoscience learning bridges the gap between indigenous knowledge passed down from ancestors and scientific knowledge, where indigenous knowledge is often the informal knowledge developed within the community. Knowledge of indigenous science can be acquired by students from the local culture surrounding them, such as "rasi," a traditional food in the indigenous community of Cireundeu Village in the city of Cimahi, West Java Province. Rasi, made from cassava, contains indigenous science relevant to junior high school's science curriculum. Ethnoscience learning based on rasi can be elaborated in a philosophical examination, considering ontological and axiological aspects. An ontological perspective can explain the nature of ethnoscience, while an axiological perspective can elucidate the values obtained through ethnoscience learning.

LITERATURE OVERVIEW

Philosophy etymologically originates from the Greek language, namely philosophia, consisting of the words philos, love, and Sophia, meaning wisdom [10]. Philosophy, in a literal sense, signifies a love for wisdom [41]. It is a genuine desire for the ultimate truth [14] about the phenomena of life, and human thought is critically elaborated into fundamental concepts [10].

The truth produced by philosophical thinking is an answer in the form of ideas or concepts [5], presenting an abstract and speculative truth that may not reveal the practical implementation [10]. Philosophy is one of the branches of knowledge concerned fundamentally with truth [14]. According to Djajadi, philosophy exhibits methodical, systematic, coherent, rational, comprehensive, radical, and universal characteristics. The material object of philosophy refers to substances that exist and can be thought of by humans. In contrast, the formal object of philosophy describes the ways and nature of thinking about these objects [10].

The main branches of philosophy are as follows [15]:

1. Ontology or metaphysics is the branch of philosophy concerning the most profound nature of the reality of everything, whether physical or non-physical
2. Epistemology, the branch of philosophy concerning the nature of human knowledge

3. Axiology, the branch of philosophy concerning the nature of values. Based on its emphasis, axiology can be divided into ethics (philosophy of human behavior, good and evil), moral philosophy, and aesthetics or philosophy of beauty.

RESEARCH METHOD

This study employs a literature review method [32] to elaborate ethnoscience-based learning on rasi, viewed from ontological and axiological aspects [19]. The data sources for this study include books, previous research articles in journals, and popular scientific articles on ethnoscience, local wisdom, rasi, and the concept of science learning in junior high school, along with other relevant sources. The data to be examined in this literature review research is expected to provide meaning to the reality, events, social activities, perceptions, and thoughts that are the focus of the research.

RESULTS AND DISCUSSION

Ontological Aspect

Ontology is explained based on the grand theory underlying ethnoscience. Ethnoscience originates from the Greek word "ethnos," meaning "nation," and the Latin word "scientia," meaning "knowledge" [20]. Ethnoscience can be defined as a knowledge system about nature owned by a specific indigenous or traditional culture that has been formalized [42]. Thus, ethnoscience is a science that develops within a society, is passed down through generations, and can be explained through scientific knowledge. Natural science is local knowledge the community holds [37] and exists within the culture [29]. This community science is usually expressed orally or symbolically based on personal experiences and results in limitations in conveying knowledge through modern models [20].

As for the learning objectives of ethnoscience, they are outlined by Aji (2), Lestari & Fitriani [21], and Supriyadi et al. [38]: 1) providing positive influence in the form of inculturation learning that fosters appreciation for culture; 2) offering contextual and student-centered learning so that students can inquire, as this learning supports the process of assimilation and accommodation of cognitive learning, developing their scientific attitudes, applications, and skills by the nature of science itself.

Axiological Aspect

In the axiological aspect, the connection between ethnoscience-based science learning and cultural values is examined, enabling the knowledge to be helpful for students in both the community and the school environment [27]. Axiology also explains the benefits of science learning in daily life regarding ethical and aesthetic values, i.e., the implications of ethnoscience learning and its contribution to student learning outcomes. Ethnoscience learning is more oriented towards integrated understanding rather than mere in-depth understanding. Ethnoscience is emphasized by Vygotsky's theory, stating that the framework of thinking originates from social origins and is "internalized through cultural practices." In his theory, Vygotsky proposed four "genetic domains" to investigate higher cognitive processes: phylogenetic (human evolution), cultural-historical (human social activities), ontogenetic (individual lifespan), and micro genetic (direct events) [25].

Ethnoscience is based on a constructivist perspective and prioritizes meaningful learning [4] because it helps construct students' knowledge comprehensively about their surrounding environment and prevents alienation from it [22]. Ethnoscience can be a

learning approach to reconstruct indigenous science that evolves in society into scientific knowledge [19], thus connecting science with culture to shape students' character [39]. Ethnoscience is also a strategy to build a learning environment by integrating cultural values and traditions into the learning process to benefit students' lives [36]. The ethnoscience approach can be integrated into various learning models, including discovery learning, problem-based learning (PBL), project-based learning (PjBL), constructivist approaches, contextual learning, and others [31].

Ethnoscience learning is crucial for every generation as it can foster a love for culture and local wisdom through the introduction of the cultural potential of a region [30]. Ethnoscience is considered effective in educating students to adopt a tolerant attitude towards the cultural diversity and local traditions of each region in Indonesia [40]. It can shield them from the acculturation of foreign cultures transformed by the current highly pervasive electronic media [24]. Integrating "rasi" into ethnoscience learning is an innovation to create an effective learning environment. Ethnoscience learning utilizing "rasi" can facilitate students in identifying, elaborating, communicating, and concluding scientific concepts derived from indigenous science contained within "rasi." Ethnoscience learning utilizing "rasi" as a source of science learning in schools signifies that "rasi" can be integrated into scientific concepts to construct the science dimension in students [16], encompassing processes, products, applications, and attitudes.

"Rasi" is the staple food of the indigenous community in Cireundeu Village, located in the Leuwigajah Subdistrict, South Cimahi District, Cimahi City, West Java Province. The first production of "rasi" was initiated by Omoh Astamah in 1924 after the Dutch colonizers imprisoned him for 100 days in Banceuy prison. The idea arose from concerns about the increasing population while agricultural land was diminishing. This cultural practice has been passed down through generations, so they do not consume rice to this day. It is a food resilience practice applied by the Cireundeu community. There are six reasons why the indigenous people of Cireundeu consume "rasi," namely to honor the struggle of their ancestors, follow ancestral teachings, become more selfreliant physically and mentally, obtain a source of strength, carbohydrates, and cost-effective energy, and preserve tradition [1].

"Rasi" is made from cassava tubers *(Manihot esculenta),* usually harvested from one-year-old plants. The production process begins with "ngerik" (harvesting), "ngupas" (peeling), and "ngabilas" (rinsing the cassava). The cassava is then grated (ground) and squeezed to separate the pulp and the starchy liquid. The squeezing is done five times to obtain dry pulp. The cassava pulp is then sun-dried. Next, the dried pulp is "ditutu" (pounded) using a mortar and pestle until it becomes smooth, and then it is sifted to obtain a genuinely smooth texture. Similar to rice, before consumption, "rasi" is washed, "dicaian" (cooked with water), "diseupan" (steamed), and "diakeul" (cooled) is like cooking rice. "Rasi" is usually served with side dishes such as chicken, tofu, cassava leaves, papaya leaves, and chili sauce. In 100 grams of "rasi," there is an energy content of 350 kcal, protein amounting to 0.90 g; the fat of 0.40 g; and carbohydrates totaling 85.70 g. "Rasi" fulfills 16% of the daily recommended intake. The essential nutrients in "rasi" are 48% dietary fiber and 38% copper [12].

The elaboration of the relevance of ethnoscience that positions local wisdom as a

source of learning in schools is carried out by analyzing the stages of making "rasi" in connection with junior high school science (IPA) subjects. The results of the analysis of ethnoscience relevance based on "rasi" are presented in the following table.

Table 1. Relevance of Ethnoscience Concepts in "Rasi" with Junior High School Science Subjects

No.	Indigenous Science in Rasi	Relevant Science Concepts
1	Rasi is made from cassava tubers (3 types of cassava plants)	Classification of Organism
2	Knife cuts cassava	Simple Machine
3	Cassava is ground and then filtered	Separation of Mixtures (Filtration)
4	Cassava dregs are dried in the sun	Calor and Physics Change
5	Cassava pulp is pounded until smooth by a pestle	Force and Pressure
6	Component of Rasi	Nutrition, Efforts to maintain the health of the human body

Based on the research results, it is known that the planning for the ethnoscience approach in school learning still needs to be well-organized, but teachers unconsciously have applied or may have applied ethnoscience learning using different approaches or models [6]. Meanwhile, referring to previous research conducted on students, it is known that ethnoscience learning can enhance scientific literacy (Zidny & Eilks, 2022), science process skills [26], creative thinking (Damayanti et al., 2017), and critical thinking abilities of students [8], especially at the junior high school level [11]. Furthermore, ethnoscience learning based on Lombok's local wisdom can improve problemsolving skills and develop entrepreneurial skills [13]. This improvement because learning associated with local culture will make students trained and accustomed to solving problems. Students realize that the concepts they learn are relevant to the reality in their living environment [18]. Ethnoscience also instills an appreciation for existing cultures among students [20].

Another study found that ethnoscience learning can enhance scientific character traits, including hard work, curiosity, social concern, and responsibility [7]. Ethnoscience learning can enhance students' conservation spirit [35]. Students show joy, relaxation, and lack of boredom [29] because the learning process is engaging and not monotonous [33]. Moreover, returning to nature or implementing local wisdom in learning is believed to promote the achievement of sustainable development goals [3]. Science subjects in junior high school that can be integrated with ethnoscience include (1) fish smoking associated with Energy and Its Changes [34]; (2) making Burned Batik associated with Chemistry in Life, the Role of Heat in Daily Life, and the Role of Humans in Environmental Management [9]; (3) traditional food related to the Food Additives material [33]

CONCLUSION

Based on the results and discussions, it can be concluded that (1) the ontological aspect of philosophy examines the nature of ethnoscience based on "rasi," and the axiological aspect examines the implications of ethnosciencebased "rasi"

learning; (2) "rasi" made from cassava has relevance as a learning source for science subjects on the Classification of Organism, Simple Machines, Separation of Mixtures, Calor, Physical Changes, Force, Pressure, Nutrition, and Efforts to Maintain Body Health.

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