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Article

Identification of Dumbeg in Ethnoscience Studies as a Source of Science Learning in Rembang SocietySri Wahyuni^{1*}, Ulya Fawaida²^{1,2} Institut Agama Islam Negeri Kudus, Indonesia**Corresponding Address: sriwahyuni27097@gmail.com***Article Info**

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ABSTRACT

Culture has a positive impact when studied more deeply. Culture is one of the characteristics of a region. Dumbeg is one of the typical foods that has ethnoscience studies in it. Contextual-based learning by utilizing phenomena that exist in nature such as local culture is very important so that students can preserve the existing local culture. The purpose of this study is to study ethnoscience in the manufacture of dumbeg in Rembang district as a source of science learning. The method in this study uses observation and interviews with informants. The results of this study are 1) Culture and science have a strong relationship so that ethnoscience can be used as a source of learning in the world of education. 2) The process of making dumbeg is one example of the correlation between science and culture. 3) Local dumbeg culture can be used as a source of science learning, both physics and biology.

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INTRODUCTION

This guideline is a template for writing the manuscript for Integrative Science Education and Technological developments have brought significant changes to science. Science is composed of several knowledge tools that are used to search, discover, and increase understanding of a problem using certain studies (Ridwan et al., 2021). The increasingly rapid development of technology means that people continue to increase their knowledge and increase their curiosity.

Knowledge is the result of the process of human curiosity from not knowing to knowing. (Ridwan et al., 2021) This process of finding out includes various methods and concepts from both education and experience. Science can essentially be explained regarding what is the object of study (anthology), how science is formed from what makes up its body (epistemology), what benefits it has for humans (axiology) and what are the procedures for studying it (methodology). (Ridwan et al., 2021)

Knowledge is needed as a supporter of successful learning. One example of successful learning is learning resources. Learning resources have an important role in education where learning resources are any information that can be used in learning activities. These learning resources are usually anything that can be utilized by teachers and students to increase the effectiveness and efficiency of learning. (Sujarwo et al., 2018)

In general, learning resources are a term that describes everything that can be used in learning activities both in the educational environment, the community environment and from anywhere else. (Muhammad, 2018)The community environment has quite a big impact on people's knowledge. One of them is regarding local wisdom. Local wisdom and knowledge are closely related, where local wisdom is a view of life and knowledge as well as a life strategy in the form of activities carried out by local communities in responding to various problems and fulfilling community needs. (Njatrijani, 2018). Local wisdom is something that must be maintained because it is the identity of a region. Local wisdom can be used as a learning resource by studying the environment around them. The effect of learning local wisdom can be cognitive and affective growth in students. Without realizing it, a meaningful learning process is obtained from learning that is related to everyday life (realistic). Ethnoscience is realistic learning where this learning covers people's lives. Ethnoscience focuses on traditions, products and culture that grow in society. (Dwi et al., 2023)

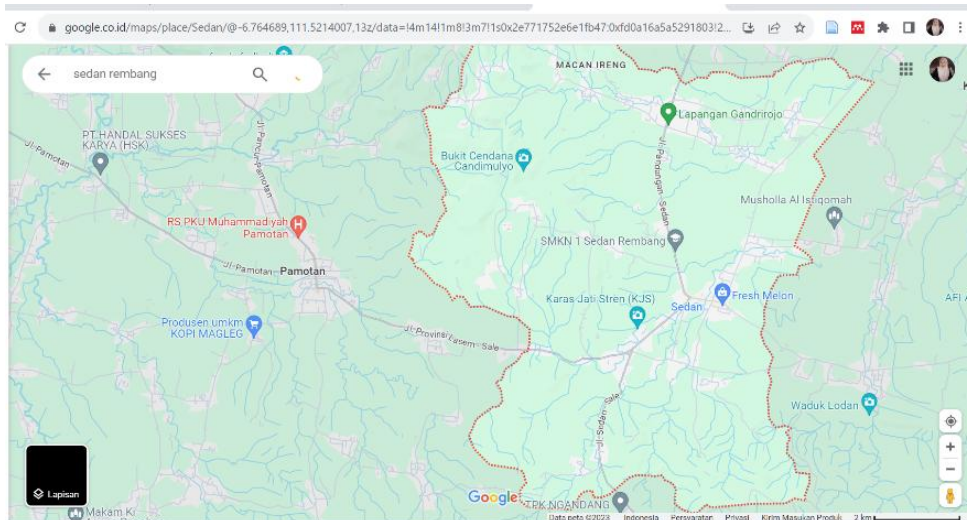
In daily activities, humans cannot be separated from eating, this is the main human need for survival. In this position, food becomes the main necessity for life in the order of primary needs besides shelter and clothing. Along with advances in science and technology, human needs for food also develop. (Kusdiwanggo et al., 2020)There are many new innovations related to variations in food types and ingredients, processing methods and the purpose of food that has changed. Through the intermediary of food, the characteristics of a person's community can be seen, even the region where the food comes from. In accordance with changes, it is not only a necessity but also an art and self-recognition of a nation or region.

Rembang is one of the districts in Central Java Province. Geographically, Rembang Regency is located in the northeastern part of Central Java Province. The northern part borders the Java Sea, the southern part borders Blora Regency, the western part borders Pati Regency, the eastern part borders directly on East Java Province, namely Tuban Regency. Rembang, is one of the districts in the province of Central Java, Indonesia which has several strong characteristics both in terms of language, religion, customs, natural potential and special food which then contributes greatly to the economy of the Rembang community.(Kanzunnudin et al., 2018) One example of local wisdom in the Rembang community is the typical Rembang Dumbeg food. Dumbeg is a typical Rembang food where the manufacturing and processing process is still relatively simple. Dumbeg has cultural value which to this day makes dumbeg a typical food. The dumbeg production process as one of the local cultures in the city of Rembang has the potential to be integrated into local culture based on science learning.

Based on the background that has been stated, several foods have high cultural value so they can become the identity of a region, one of which is dumbeg as a typical Rembang food and is related to science. The use of culture in learning can be done to support student learning success. Culture and learning processes obtained from outside can be used as learning media.(Salama & Kadir, 2022) Science learning will be successful when it contains components to produce an effective and efficient learning process. The use of learning media is one of the scientific components that can help carry out learning activities. (Qolbyatin, Septaria, and Wulandari 2023) . Therefore, a deeper study was carried out regarding dumbeg so that it could be integrated into interesting science learning.

METHODS

The method in this research uses a research method in the form of participatory observation (dumbeg makers) in this research using respondents from Rt 02 Rw 04 Sedan Rembang, Central Java, using interviews to dig up further data on local communities who produce and know how to make dumbegs and use books or research journals as reference material. To support the data the author includes an interview sheet.



Source: [https://www.google.co.id/maps/place/Sedan area of Sedan, Waru, Sidorejo, Rembang, Central Java.](https://www.google.co.id/maps/place/Sedan+area+of+Sedan,+Waru,+Sidorejo,+Rembang,+Central+Java)

Figure 1. Map location of Sedan, Rembang district, Central Java Province

The data collection technique in this research was through interviews and field observations. During data collection, the researcher observed and participated in the manufacturing process from the initial preparation of tools and materials until the dumbeg was cooked. Primary data collection uses observation, in-depth interviews and discussions in the field. Meanwhile, secondary data was collected through literature studies by searching for relevant journals and articles related to dumbeg production culture.

RESULTS AND DISCUSSION

Indonesia is a country that contains thousands of islands with all kinds of diversity, culture, ethnicity and traditions in each region which then has its own uniqueness. Based on the results of research data collection, it is clear that the food in one area can become a characteristic of the area itself. Dumbeg food is one of the traditional foods. (Dwi et al., 2023) Dumbeg is a traditional food made from rice flour, rice itself is a harvest from people's fields. Dumbeg itself is often served during the tradition of giving alms to the earth by making this traditional food. The reason people use rice flour as the basic ingredient is because of the shape of the harvest. (Anggara, Wuryani, and Widiarto 2023) Observation activities carried out observations of the manufacture of dumbeg. This can be analyzed related to making dumbegs and then integrated into the learning process. When a study is carried out, there is a correlation between science and making dumbegs which can then be integrated into the learning process. The observation activity of making dumbegs is presented in Figures 2 – 4.



Figure 2. The Main Ingredients in Making Dumbegs (Consisting of rice flour, brown sugar, and palm leaves)



Figure 3. Dumbeg Filling Process

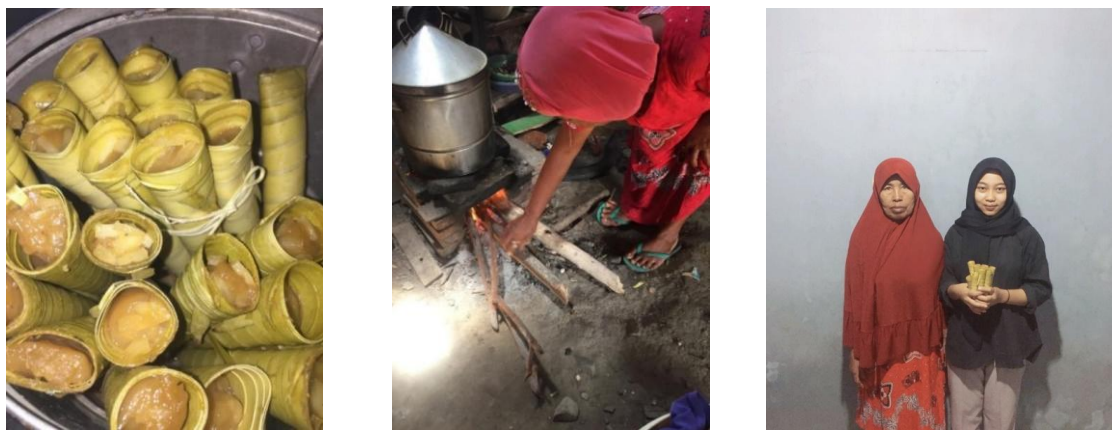


Figure 4. The Process of Cooking Dumbeg and with Resource Person Mrs. Kartini

Based on the results of observations from observations and sources, this activity is in accordance with the ethnoscience concept that making dumbeg as a traditional food has a correlation with scientific science so that it can be used in the learning process. In this case it will be explained in a statement which will be clarified using a table.

Table 1. Societal Science and Scientific Science

| No | Question | Community Science | Original Science |
|----|--|---|---|
| 1. | Buk Dumbeg niku nopo ngeh? IMa'am what is dumbeg? | Yo kui nduk, dumbeg iku pakanan sek kegawe songko tepung beras lan biasane kui ono ing acara sedekah bumi ing rembang. Tapi yo biasane mung digawe pendak ono acaran sedekah bumi. In English: Yes, sis, Dumbeg is a food made from the main ingredient of rice flour and this food is usually served at the earth alms event in Rembang. But yes, usually it only happens at earth charity events. | The earth alms ceremony is a series of activities in social life as a manifestation of gratitude and gratitude to God. (Wiwid Naluriani Kasih, 2017)Alms giving to the earth is usually done in the form of a village slametan. |
| 2. | La bahan kange ndamel dumbeg niku nopo mawon buk What are the ingredients for making dumbeg, ma'am? | Bahan e kui biasane yo gampang nduk, koyo tepung beras, gulo jowo, tepung kanji, santen lan cikalan nah mengko terus diwadahi adah dumbeg sek digawe songko lontar In English | From the interview results, a correlation was found with science regarding the materials used, one of the materials mentioned was coconut/cikalan, where in the scientific context coconut has |

| No | Question | Community Science | Original Science |
|----|--|--|--|
| | | | <p>the following classification: (Mardiatmoko & Mira, 2018)</p> <p>Kingdom: Plantae Sub Kingdom: Viridiplantae Infra Kingdom: Streptophyta Super Division: Embryophyta Division: Tracheophyta Sub Division: Spermatophytina Class: Magnoliopsida Super Order: Lilianae Order: Arecales Family: Arecaceae Genus: <i>Cocos</i> L. Species: <i>Cocos nucifera</i> L.</p> <p>Of course, it is on this basis that science can then be correlated with the manufacture of dumbegs.</p> |
| 3. | <p>Alat dan bahan utama nge ndamel dumbeg niku nopo mawon nggeh bu?</p> <p>What are the tools and materials for making dumbeg mam'am??</p> | <p>Alat alate ya paling dandang terus irus, panci, parutan</p> <p>Bahan- bahan e kui :</p> <ol style="list-style-type: none"> 1. Tepung beras 1 kg 2. Tepung kanji ¾ kg 3. 1 kg gulo jowo 4. 2 cikalana 5. Santen 6. Godong Lontar/Godong kelapa <p>In English: The tools are a large pan, stirrer and grater And the materials for making dumbegs are:</p> <ol style="list-style-type: none"> 1. Rice flour 1 kg 2. Starch ¾ kg 3. 1 kg brown sugar 4. 2 coconuts 5. Coconut cream 6. Palm leaves or coconut leaves | <p>Lontar tree (<i>Borassus flabellifer</i> L.)</p> <p>Palm leaves have a million benefits which come from the siwalan tree. The classification of palm trees includes: (Arsyad, 2015)</p> <p>Kingdom: Plantae Division: Angiosperms Class: Monocotyledonae Order: Arealea Family: Palmaceae Genus: <i>Borassus</i> Species: <i>Borassus flabellifer</i></p> |
| 4. | <p>Cara ndamel e niku kados punopo nggeh bu?</p> <p>How do you make it ma'am?</p> | <p>Sek kawitan yo kui gae segitiga songko lontar utowo janur terus gae adonan lan gulo jowo diiris tipis terus digodok karo santen, uyah lan banyu ngasi meduk anak wis terus campurno karo tepung terigu, kanji ngasi rodok kentel, barang wes kentel terus isikno neng lontar sek wes disusun lurus terus dikukus yo kiro-kiro 20- setengah jam.</p> | <p>The cooking process is related to science. Boiling coconut milk requires knowledge related to natural science, namely the dispersion process. (Yulindha et al., 2021) This process then has a scope with science. The dispersed phase is the substance that is included in</p> |

| No | Question | Community Science | Original Science |
|----|---|---|--|
| | | <p>In English: The first thing to do is make coconut palm leaves or palm leaves into a cone shape, then make a dough by slicing Javanese sugar and dissolving it with coconut milk, salt and water over low heat until it boils, then mix the prepared rice flour and starch until it thickens a little, then pour it in. into a heart cone and arrange in the steamer upright, steam until hardened, around 20-30 minutes.</p> | <p>the dispersing phase. The dispersed phase is the solvent while the dispersing phase is the solvent in the colloidal system. (Amalia Yunia Rahmawati, 2020)Where when you cook coconut milk over high heat and don't stir it, it will cause lumps resulting in a separation between the dispersed phase and the dispersion. Boiling water and measuring the heat transfer process occurs. Boiling water and measuring the heat transfer process occurs. In the process of boiling water, heat propagates from the heat source (fire) through the boiling metal. At that time, heat transfer occurs by conduction. Then, the heat of the metal propagates through the water, so that the initially cold water slowly becomes hot. The hot water at the bottom rises, while the water at the surface will fall to the bottom of the boiling metal. Here, heat transfer occurs by convection.(Lusiani et al., 2019)</p> |
| 5. | <p>Dumbeg niku nggih asli saking mriki nggeh buk?</p> <p>Dumbeg is originally from here, ma'am?</p> | <p>Yo dumbeg kui wes ono jaman cilikku, wong saiki nak ogak melaksanakan budaya yo wes ilang. Wong ndisik iseh ngo alat sederhana saiki lak yo wes ono kompor, gas wes penak mb</p> <p>In English: Dumbeg existed in ancient times even when I was a child. Nowadays, if you don't continue to cultivate it, it will disappear by itself. In the past, we still used simple tools, but now there are stoves, gas is very good</p> | <p>Technological advances have brought major changes in human development. he development of biotechnology science has turned the world into a first generation revolution and gave birth to history when human and animal power was replaced by the emergence of machines. (Wijoyo et al., 2020). Mastery of science and technology is one of the conditions for achieving prosperity in international development. Society needs to realize that the role of science and technology in development has a significant impact on improving quality for themselves and the nation</p> |

Table 2. Correlation of Making Dumbegs with SMP Competency Standards

| Caloric Matter | | |
|----------------|--|---|
| No. | Competency standards | Indicator |
| 1. | 3.4 Analyze the concepts of temperature, expansion, heat, heat transfer, and their application in everyday life including mechanisms for maintaining stable body temperature in humans and animals | 3.4.1 Know the meaning of temperature and thermometer and types of thermometers. 3.4.2 Determine the temperature scale by taking temperature measurements with a scale thermometer, and comparing the measurements with a known temperature scale thermometer. 3.4.3 Explain the meaning of heat. 3.4.4 Describe the relationship between heat and temperature and the relationship between heat and changes in form. 3.4.5 Determine the types of heat transfer. |
| 2. | 4.4 Carry out experiments to investigate the effect of heat on the temperature and shape of objects as well as heat transfer | 4.4.1 Students can investigate the effect of material type on the ability to conduct heat during conduction events. 4.4.2 Students can present the results of designing the use of heat radiation. |

Science is a branch of natural science that studies aspects related to natural events. Branches of natural science are biology, physics and chemistry. Physics is a source of human activities which is one example of the field of ethnoscience approach in science that studies related to natural phenomena and interactions with customs.. (Hasanah & Kusumawati, 2022)

Based on the results of observations and studies of dumbeg production listed in table 1, it explains that dumbeg is included in the local culture in the city of Rembang which has the potential to be integrated into local culture-based products. Local culture that develops in the surrounding community, needs to be studied to explore the benefits for future generations. Based on the results of observations between science and culture have a close correlation in it. Where in this case ethnoscience is part of science and culture.

Ethnoscience consists of the word ethnose which means nation and the word science which means knowledge. In this case, ethnoscience is knowledge possessed by a nation or group which emphasizes the habits or customs that develop in society. (Munawaroh et al., 2022) Research into the making of dumbeg has several connections with science, including the materials used, which include palm leaves, which have a classification in science.

Lontar or *Borassus flabellifer* Linn. is a type of palm that belongs to the *Gymnospermae* plant, has a single seed (*Monocotiledoneae*) from the *Arecales* order, the *Palmae* family (*Arecaceae*), and the *Borassus* genus. Lontar has a single stem, a rough stem, is rather blackish with thickening of the leaf sheath at the bottom. Lontar in some areas of Java is known as siwalan. The lontar plant has fan-like leaves, round, stiff, finger-like and grayish green. (Nasri et al., 2017).

Science learning is related to culture. When both are linked, there is a correlation between the two. Local culture can be used as the right learning resource to develop student potential and preserve existing culture. There are many learning resources that can be used in learning, including analyzing local culture. For more details in the presentation of science, the relationship with science is presented in table 2 in the heat material.

Heat is an energy that can move or be transferred. It can move due to differences in temperature, so it can be called Heat. (Salo et al., 2023) And can change the shape of an object. The transfer of heat is caused by the transfer of energy from a place with a high temperature to a place with a lower temperature. In the stages of heat transfer, it is divided into three stages: convection, conduction, and radiation. At the convection stage, the transfer experienced results in a change in a substance in each object caused by the transfer of existing energy. At the conduction stage, the transfer of heat is not followed by the transfer of a particle. So, when experiencing a change, the particles in the object do not change shape at all, only a change in place or shift. While the radiation stage, the transfer of heat and does not go through a substance

as an intermediary. For example, during the day it is very hot, even though the position between the sun and the earth is very far but we can feel the sunlight. (Wahyuni & Fitria, 2018)

The process of learning to make dumbeg is a learning that has an integration between culture and science. The importance of integrating culture in learning to preserve culture. Students are the next generation so they must know the local culture as a characteristic or regional identity. (Khoiri & Sunarno, 2018) The relationship between culture and science is not limited to one branch of science, but is integrated into several branches of science, namely biology and physics. (Fawaida & Abidin, 2023) From the ingredients to the cooking process, dumbeg has a relationship with science such as, the basic ingredient for making dumbeg is lontar, lontar is related to biology and is included in the material for plant classification, this material is a sub-chapter in class VII in the chapter on the classification of living things at the junior high school / MTs level. In addition to biology, the process of cooking dumbeg is also related to science in the material on heat transfer. Heat transfer is part of the material for class VII.

The process of cooking dumbeg is one example of the relationship between ethnoscience. In the process of making dumbeg, there are several stages that are related to science, especially in the heat during the cooking process of dumbeg so that it can be used as a science learning. Ethnoscience is a real example of the relationship between science and culture in society.

CONCLUSION

Based on the results of research and studies in interview and observation methods, it can be concluded that the community's knowledge of the dumbeg production process in Sedan Village, Rembang Regency is one of the cultures that must be preserved. This culture is correlated with science and can be applied to science-based learning at the junior high school level. The making of this dumbeg is related to the heat material in the cooking process. Heat is an energy that can move or be transferred. It can move due to differences in temperature in class VII of junior high school related to the dumbeg cooking process, in addition to being related to physics, the main ingredient in making dumbeg, namely lontar, is also related to biology which is included in the material on the classification of living things in class VII. On this basis, the production of dumbeg can be used as a meaningful learning process through local culture.

Dumbeg is a typical Rembang food, this makes dumbeg only able to be used as a learning resource in the Rembang community because not all areas know dumbeg as food. In the future, innovation and cooking in the form of videos are needed so that dumbeg can be used as a learning resource for the wider community, especially in science learning. (Fawaid et al., 2023).

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