

Ethnomathematics Exploration in the Process of Making Traditional Lemang Food as a Cultural Custom of Kerinci

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Abstract

Culture and education are interrelated creative processes. The culture that develops in society unwittingly contains a mathematical concept in it. One of the mathematical concepts contained in this culture is the ethnomathematics concept. The purpose of this study was to examine, explore and analyze ethnomathematics in the process of making traditional lemang food as a cultural custom of the Kerinci precisely in the Tanjung Pauh area. The method used is a qualitative descriptive research method with an ethnographic approach. Data collection was carried out by observation, interviews with traditional leaders and the Tanjung Pauh community and documentation. The results showed that lemang contains a lot of ethnomathematics elements, including geometric elements, namely tubes, circles, and cylinder volumes, and there are also geometrical elements and calculations needed in balemang and also the material tools used refer to mathematical concepts.

Keywords: *Ethnomathematics; Mathematics; Culture; Food; Lemang.*

Abstrak

Kebudayaan dan pendidikan adalah proses kreatif yang saling berhubungan. Budaya yang berkembang dimasyarakat tanpa disadari mengandung sebuah konsep matematika di dalamnya. konsep matematika yang terkandung didalam budaya tersebut salah satunya konsep etnomatematika. Tujuan penelitian ini adalah untuk mengkaji, mengeksplorasi serta menganalisis etnomatematika pada proses pembuatan makanan tradisional lemang sebagai adat budaya Kerinci tepatnya di daerah Tanjung Pauh. Metode yang digunakan adalah metode penelitian deskriptif kualitatif dengan pendekatan etnografi. Pengumpulan data dilakukan dengan observasi, wawancara wawancara kepada tokoh adat dan masyarakat tanjung pauh serta dokumentasi. Hasil penelitian menunjukkan bahwa pada lemang banyak mengandung unsur etnomatematika antara lain unsur bangun ruang yaitu tabung, lingkaran, volume tabung, dan juga terdapat unsur bangun ruang serta perhitungan yang dibutuhkan dalam balemang dan juga alat bahan yang digunakan mengacu pada konsep matematika.

Kata Kunci: Etnomatematika; Matematika; Budaya; Makanan; Lemang.

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INTRODUCTION

Culture and education are creative and interconnected processes. Education is a process of civilization and also culture is taught in the educational process (Yudi Latif, 2020). Education aims to improve and preserve culture, the existence of education can bring culture from one level to another (Rusdiansyah, 2020). Education in Indonesia is also inseparable from the so-called learning of mathematics.

Learning mathematics is a means of generating human reasoning (Betyka, Putra, & Erita, 2019). Learning mathematics directs students to be logical, critical, creative, and systematic (Utami & Cahyono, 2020). This statement also agrees with Suherman in Harahap, Khairani, and Masitoh (2019) that mathematics comes from the word *mathematica* which means knowledge obtained through thinking. From learning mathematics, one of the goals is to understand concepts, explain the interrelationships between concepts, and implement concepts easily, quickly, and thoroughly in solving problems (Auliya, 2016). The mathematical concepts that exist in the human mind are sometimes not the same as the mathematical concepts in real life. Dwidayati (2018) argues that mathematics that has been studied at school with mathematics that is learned in everyday life has differences. Therefore, learning mathematics must indeed provide a link between mathematics in everyday life and learning mathematics that is applied in schools. Learning mathematics should be a fun learning experience for students.

Mathematical concepts are implemented in a unique socio-cultural setting, referring to the use of mathematical concepts and procedures acquired outside of school and mastery of mathematical skills outside of school. Therefore, the development of student creativity can be realized by integrating meaningful mathematics and cultural education to increase students' ability to develop cultural heritage in the current context (Wulandari & Puspadewi, 2016). Ethnomathematics is a complex and dynamic representation that describes cultural influences in the use and application of mathematics (Rusliah, 2016).

Based on research conducted on the curriculum (2013) about the role of ethnomathematics in the implementation of mathematics education,

ethnomathematics allows students to build mathematical concepts, ethnomathematics provides a good motivational environment for creative learning, ethnomathematics can provide effective skills, and mathematics supports ethnicity, and ethnomathematics supports the ability -student abilities are by the expectations of implementing a scientific approach (Richardo, 2016).

Ethnomathematics was first applied by a mathematician named D'Ambrosio in the late 1960s to describe the introduction of mathematical practice to cultural groups (Dedi Muhtadi et al, 2017). This statement also agrees with what was explained by Francois (2010) which states that the purpose of ethnomathematics is the introduction of cultural experience and the use of mathematics in such a way that it not only makes learning mathematics more meaningful but also the view that mathematical knowledge is rooted in and attached to the social and cultural environment and can be appreciated in the use of mathematics in everyday life.

Culture-based mathematics learning is one of the innovations that removes perceptions of the rigidity of mathematics and combines it with interesting things, such as a culture where people's understanding of mathematics is flexible (Maternity et al. 2018). Culture is something that we cannot avoid because with this culture the community becomes a unit with different manifestations (Jumri, 2019). Education and culture are interrelated units, both mutually reinforcing and supporting. Culture is the basis of educational philosophy, while the task of education is to shape human beings to become civilized (Ulum, 2018). The need for culture-based mathematics education aims to transform cultural values to shape the nation's character, which can be done through ethnomathematics (Romadoni 2017). Learning mathematics through an ethnomathematics approach has a positive effect on mathematical abilities. For example, the mathematical abilities of elementary school students include the ability to understand mathematical concepts, numeracy skills, and problem understanding. By integrating culture into mathematics it is hoped that students can better understand mathematical concepts (Prasetyo, Mastur, and Asikin 2019).

One type of ethnomathematics or one that contains elements of mathematics is traditional food. Traditional food is a food heritage that has been passed down from generation to generation and is rooted in Indonesian society (Muhilal, 1995 in Adiasih, 2015). And researchers are interested in exploring ethnomathematics in the typical traditional food of Kerinci, namely lemang. Lemang is a traditional food from the Kerinci area which has been passed down from generation to generation. Balemang is usually performed at traditional events or major events in the Kerinci area such as kenduri sko, the commemoration of isra' mijraj, fasting month, Eid al-Fitr, Eid al-Adha, the commemoration of the Prophet Muhammad's birthday, and other traditional events or events other big.

Besides that, lemang also has meaning for the Kerinci community, namely *Seruas bambu lemang* means *bulat air dek pembuluh, bulat kato dek mufakat*. All implementation has been deliberation and consensus. Glutinous rice for lemang means being close and strengthening kinship ties in society. Coconut milk water, which means *Putih kapas boleh dilihat putih hati berkeadaan*. Everything that is sacrificed for event activities is with a sincere or sincere heart, without the slightest sense of loss.

Research on lemang has also been carried out by Mutiara, J. R., & Fridayati, L. (2022). A Study of the Kancung Beruk Lemang in the Village of Dusun Baru Lempur, Kerinci Regency. What distinguishes this research from previous research is in terms of place, time, title, and ethnomathematics elements contained therein.

RESEARCH METHODS

The research method used is a qualitative descriptive research method with an ethnographic approach where qualitative descriptive research aims to systematically describe the facts and characteristics of the object or subject being studied appropriately (Sukardi, 2007). Where researchers also use observation techniques (observations), interviews, and also documentation. The reason researchers use this technique is that it is easier to get data, and the data obtained

can also be trusted. From this research, it is hoped that it will provide a comprehensive and systematic description of the Balemang tradition in the Kerinci community and then be analyzed so that overall conclusions can be drawn.

This research was conducted in Lake Kerinci Barat District, Kerinci Regency, Tanjung Pauh. The research subjects were the traditional leaders and community members of Tanjung Pauh, namely Tanjung Pauh Mudik and Tanjung Pauh Hilir.

RESULTS AND DISCUSSION

Lemang is a traditional Kerinci food that is served in celebrations of holidays or traditional events such as traditional festivities, Sko festivities, commemorations of isra' mijraj, the fasting month, Eid al-Fitr, Eid al-Adha, commemoration of the Prophet Muhammad's birthday, and other events. - traditional events or other big events. Balemang has existed since time immemorial and has become a tradition from generation to generation. Besides having cultural elements, lemang also contains ethnomathematics elements.

Rakhmawati (2016) defines ethnomathematics as a special method used by certain cultural or community groups for mathematical activities. Mathematical functions here mean functions that involve abstracting from real experience to mathematics or vice versa. One of the mathematics learning models that relate mathematical concepts to real-world problems is an ethnomathematics-based learning model (Andriyani, 2017). In addition, Andriyani (2017) explains that ethnomathematics-based learning, in addition to providing opportunities to learn mathematics contextually, can motivate students to learn and students are active in the classroom, where students understand the culture and at the same time cultivate character values.

Ethnomathematics is a bridge that connects mathematics with cultural elements. By applying ethnomathematics to the learning process, it is possible to study material related to one's own culture in such a way that students can more easily understand the material because the material is directly related to their

culture, which is their daily activity in society. Of course, this helps the teacher as a guide in the learning process to facilitate students' understanding of the material. The ethnomathematics elements found in the traditional food of the Kerinci area, namely lemang, can be seen in Figure 1, Figure 2, and Figure 3.

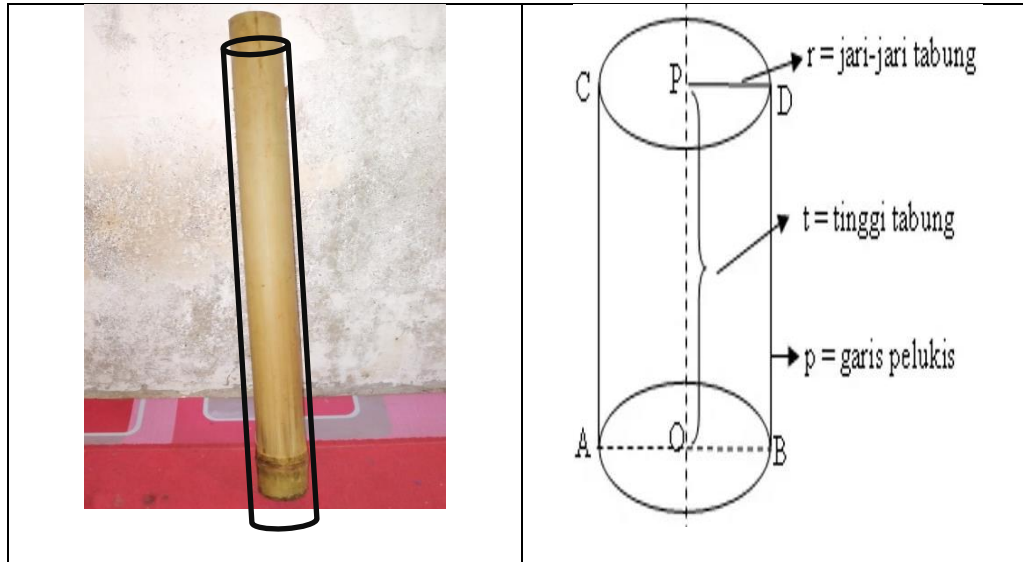


Figure 1. The shape of the Lemang in the Tanjung Pauh Region, Kerinci

Based on Figure 1, the results of observations made in Tanjung Pauh village, the tools and materials used during balemang, namely bamboo, glutinous rice, may use white glutinous rice or red glutinous rice, but in general, the people of Tanjung Pauh use white glutinous rice for balemang, water coconut milk, salt and also young banana leaves.

Lemang contains ethnomathematics elements, including geometric elements, namely the tube material. The cylinder element that has a cover (upper side) and a base (bottom side), the radius of the tube base is indicated by the lines OA and OB, the diameter of the tube base is indicated by the line AB, the curved side is called the tube cover and the tube surface is the plane that covers top side, bottom side, and tube covers. for height is indicated by the lines OP, AC and BD. The curved side is called the tube cover and the tube surface is the area that includes the top side, bottom side, and tube cover. And for the cylinder volume formula $= \pi \times r^2 \times t$. The formula for the surface area of a cylinder $= 2\pi r (r + t)$.

The formula for the area of a cylinder cover = $2\pi rt$. The formula for the area of the cylinder base = $2\pi r^2$.

In the process of making lemang, the height of bamboo used in lemang is around 60-70 cm. and the diameter of the bamboo circle is around 4-6 cm. The banana leaves used must exceed the bamboo in the lemang. And usually, 1 small lemang contains 1 canting of sticky rice and 1.5 canting of coconut milk (about 750 ml), or one and a half cups, of medium-sized lemang usually give 2 canting of rice and 2 canting of coconut milk (about 1000 ml), and for large lemangs usually 3 canting of glutinous rice and also 3 canting of coconut milk (1500 ml) or the equivalent of 3 cups of coconut milk. 1 canting is likened to a can of hindmilk milk which gives 500 ml.



Figure 2. Process of Cooking Lemang

Figure 2. is the process of burning or cooking lemang, for cooking lemang should not be too hot (high fire) usually until the wood turns to ashes and there is a little fire then the lemang is burned or cooked. Usually, the process of burning

or cooking lemang takes about 2-3 hours or about 120-180 minutes. When cooking lemang, you usually have to turn the lemang over so it doesn't burn.

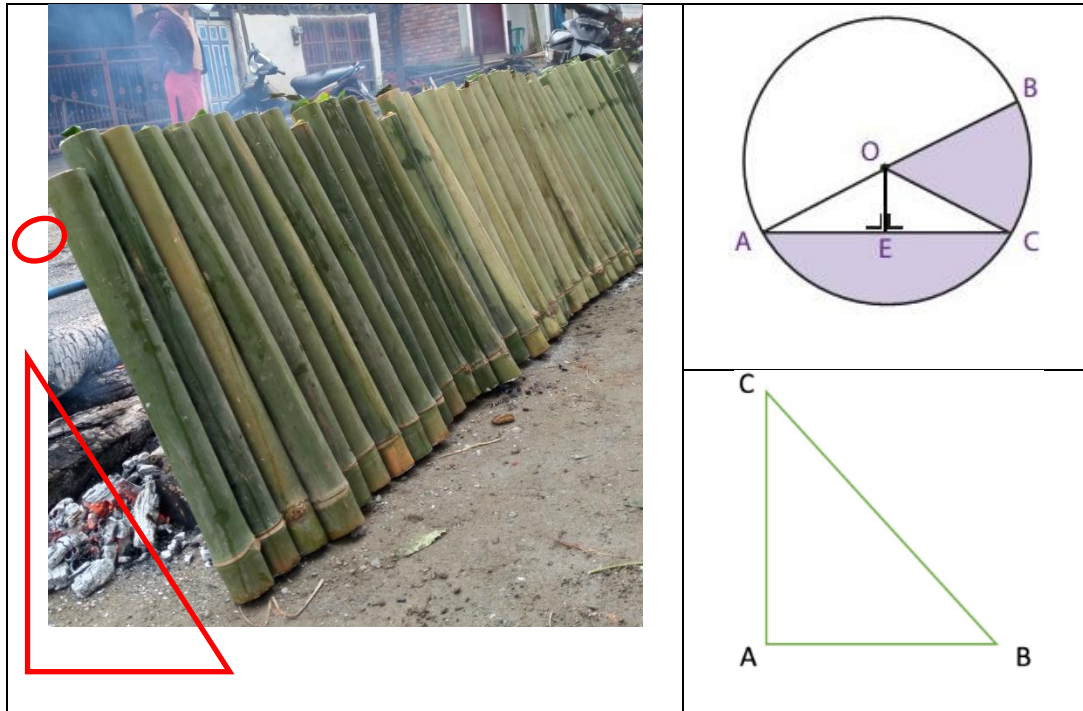


Figure 3. The slope of Lemang Cooking

Figure 3, besides having geometric elements, there are also geometric elements, namely circles and right triangles (during the combustion process). The elements contained in the circle center point (O), radius (lines OA, OB, and OC), diameter ($d=2r$), chord (straight line AC), arc (curve AC, curved line CB, and curve AB), sections (shaded areas bounded by arc AC and chord AC), arc (the arc of a circle shown by the shaded area bounded by radii OC and OB and arc BC, called the chord BOC), and apothem (OE line).

In a right triangle, some elements have three angles (angle ABC), two sides perpendicular to each other. A right triangle has one hypotenuse (line BC) and one of its angles is a right angle or 90° . Use the slope for cooking lemang so that the coconut milk and glutinous rice in the lemang don't spill and also make it easier to cook lemang or make it easier to cook.

CONCLUSION

Based on the results and discussion that has been analyzed by the researcher, it can be concluded that lemang contains many ethnomathematics elements, including geometric elements, namely tubes, and also flat shape elements, namely circles and right triangles, as well as calculations needed in balelang and also material tools used refers to a mathematical concept. Thus ethnomathematics learning will be more interesting for students and increase students' understanding of cultural elements related to mathematics. And students are also not fixated on monotonous learning.

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