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Ethnomathematical Analysis on Traditional Snacks at the Elementary School Level

Uvi Karmila[1], Supardi Uki Sajiman[2]
[1,2]Indraprasta PGRI University, Indonesia

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ABSTRACT

Objective: *This study aims to describe the use of traditional snacks as a mathematics learning medium based on ethnomathematics in elementary schools.* ***Method:*** *This study uses a qualitative descriptive approach with ethnographic methods. Data was obtained through exploration, documentation, and literature review of various types of traditional snacks that have a shape that resembles a flat shape, such as cucur cake (circle), lupis cake (triangle), layer cake (rectangular), and talam cake (square).* ***Results:*** *The results of the study show that traditional snacks can be used as contextual media in learning flat building geometry, so that it can increase students' interest and understanding of mathematics materials.* ***Novelty:*** *The integration of local culture in mathematics learning not only provides a meaningful learning experience, but also preserves local wisdom in the educational process.*

INTRODUCTION

Education is the main foundation for the progress and development of a nation. Through education, individuals gain knowledge that allows them to develop their creativity, taste, karsa, and body, so that they are able to adapt and survive in the midst of the dynamics of the times that continue to change and develop [1]. According to the Law on the national education system, education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble morals, and skills needed by themselves, the community, the nation, and the state [2]. Education is all the learning knowledge that occurs throughout life in all places and situations that have a positive influence on the growth of each individual being [3]. So, it can be concluded that education is holistic and contextual in shaping the whole human being.

Education is a conscious and sustainable process that plays an important role in shaping individuals and advancing the nation. Through education, humans can develop spiritual, intellectual, emotional, and skill potential, both through formal learning and daily life experiences. Education is also the main provision to adapt to the changing times and contribute to social life.

Mathematics has an important role in various disciplines and advances human thinking, logical, analytical, systematic, critical and creative thinking skills [4]. These skills are needed in facing real-life challenges. Mathematics not only develops logical and analytical abilities, but also trains perseverance, critical thinking skills, and problem-

solving that are applicable in everyday life. When mathematics is taught in a contextual way that relates to real situations, learning becomes more meaningful and encourages integrated cognitive, affective, and psychomotor development. The purpose of learning mathematics is to understand concepts and apply mathematical procedures in daily life and solve mathematical problems [5]. Thus, mathematics plays an important role in supporting education that touches all aspects of human development.

Mathematics is a subject taught at all levels of education from elementary school to high school, even to college. Mathematics taught in schools is called school mathematics. This school mathematics is part of mathematics that is sorted and adjusted to the stage of intellectual development and is used to develop thinking skills for students [6]. Even though it is taught in schools, mathematics still retains its basic characteristics as an abstract science with a deductive mindset. This means that school mathematics not only teaches calculation skills, but also instills a consistent logical and systematic way of thinking, in accordance with the nature of mathematics as a formal discipline.

Mathematics in schools is closely related to students who are in their respective stages of cognitive and emotional development. Therefore, in learning mathematics it is necessary to consider psychological aspects, especially the theory of mental and intellectual development. The potential in children grows gradually, starting from simple to more complex abilities. Thus, the characteristics of mathematics as a science cannot be applied directly without adapting it to the conditions of student development [7].

Mathematics learning in primary school includes the introduction of basic concepts and materials that are the foundation for understanding mathematics at a higher level. Therefore, it is important for teachers to choose the appropriate learning method so that mathematics materials can be instilled well from an early age [8]. If students learn mathematics in the right method, then their logical thinking and reasoning skills will develop. However, there are still many complaints from students about this subject. The majority of elementary school students consider math to be a difficult subject. In fact, not a few see it as a scary, less interesting, and boring subject. The phrase that is often heard from students is, "Mathematics is difficult or Mathematics is a deadly science." For those who don't like math, this lesson is considered difficult, complicated, confusing, and dizzying. As a result, they become reluctant or lazy to study mathematics [9].

The developmental period of children at primary school age is a crucial stage in the formation of their cognitive abilities. One of the theories that explains this process in depth is the theory of cognitive development put forward by Jean Piaget. Jean Piaget, a Swiss psychologist, developed a theory that provides a comprehensive understanding of how children think and understand the environment around them. Piaget identified four stages in cognitive development, namely the sensorimotor, preoperative, concrete, and formal operational stages. These four stages illustrate how children develop from a concrete mindset to more abstract and logical thinking as they get older [10].

Rousseau argued that an education must be inaugurated with the individual nature and needs of each child [11]. It can be said that Rosseau emphasized that education should respect the natural development of the child, not impose rigid or uniform

learning. This is in line with the contextual learning approach, which links the subject matter to real experiences, the surrounding environment, and students' interests and daily lives. In contextual learning, elementary school children are invited to learn actively through things that they recognize and experience directly, so that the learning process becomes more meaningful and easy to understand.

Mathematics learning in elementary school is more effective if it uses concrete approaches or also known as contextual learning. The contextual learning approach is a method that encourages students to learn actively by relating the subject matter to real-life experiences. In this approach, the material is adapted to the context of students' lives in their respective environments. Although the learning environment varies from region to region, contextual mathematics learning does not always have to relate the material to real life, especially if the material is theoretical or abstract thinking. One example of the application of contextual learning is through ethnomathematics, as well as the integration and interconnectedness between mathematical concepts [12].

Ethnomathematics in the process of learning mathematics integrates mathematics lessons into the subject matter, daily life, and existing local culture. Ethnomathematics was born and lived in a culture of society to know the concept of mathematics in daily life [13].

Mathematics learning that is associated with local culture through an ethnomathematical approach can have a positive impact on improving the quality of learning in elementary schools. This approach is able to bring mathematics closer to students' lives, so that it feels more concrete, fun, and easy to understand. In addition to strengthening the understanding of mathematical concepts, the application of ethnomathematics also helps preserve local culture and build a sense of pride in the region's cultural heritage. Therefore, the integration between mathematics and culture needs to be continuously developed as part of efforts to create learning that is contextual, meaningful, and relevant to students' lives.

RESEARCH METHOD

This type of research is a qualitative descriptive research. Descriptive research is a type of research that aims to provide a comprehensive picture of a social situation [14]. So, qualitative descriptive research is research that describes events that are heard, perceived, and made in narrative or descriptive statements [15].

This research uses an ethnographic approach, which is research that provides descriptions of culture and social phenomena, with the aim of understanding the perspective of life from various angles or aspects [16]. This research examines the use of traditional snacks that are implemented in mathematics learning in elementary schools.

The research instruments used in this study are The Human Instrument means that the researcher has a role as the main instrument that cannot be replaced/represented [17]. Researchers are directly related to research and act as data collectors through literature review, observation, and documentation.

The data sources used in this study are primary data sources and secondary data sources. Primary data sources are obtained directly through the exploration of traditional snacks and their relation to mathematical concepts. Meanwhile, secondary data sources are obtained through various literature reviews and related articles.

The data collection procedure is carried out by means of exploration, documentation, and literature study. These methods are carried out during the ethnomathematical identification of traditional snacks. Traditional snacks can contain mathematical concepts that can make learning easier.

The data analysis technique in this study is by qualitative descriptive method of the data obtained. This data is processed in 3 stages, namely data reduction, followed by data presentation, and finally data conclusions. This stage takes place during the research. The data reduction stage is the stage of summarizing, selecting, and focusing important data related to research. Then the data is presented in the form of descriptive text [18].

RESULTS AND DISCUSSION

The results or findings in this study include things that are part of traditional snacks that are related to mathematics and can be used as a learning resource. The following are the results of the research that has been conducted.

Table 1. Results of the research.

Traditional Snacks	Information	Math Learning
Cucur Cake 	Kue cucur is a traditional Indonesian snack made from a mixture of rice flour and sugar (red), then fried until cooked. This cake has a thick center and thin and crispy edges. It tastes sweet with a hint of caramel, and is often part of various traditional ceremonies in different regions.	Through the cucur cake, students can observe its round shape. This is related to the concept of circles in mathematics, especially flat plane geometry.
Lupis Cake 	Lupis cake is a traditional Indonesian snack made from glutinous rice, wrapped in banana leaves, and served with grated coconut and liquid brown sugar. This cake has a sweet and legit taste, with	Through lupis cakes, students can relate to the concept of geometry in mathematics. The triangular shape of the lupis refers to the flat shape of a triangle, one of

	a distinctive chewy texture. Lupis is often found in traditional markets and has become one of the favorite snacks of many people.	the basic shapes in geometry.
Layer Cake 	Kue lapis is one of the traditional Indonesian snacks that is famous for its multi-layered and colorful appearance. These cakes are generally made from a mixture of rice flour, starch, coconut milk, sugar, and natural or artificial food coloring. The dough is steamed gradually, layer by layer, until it forms a cake consisting of several different colors that are neatly arranged. The texture is chewy and slightly sticky, with a soft and not too sharp sweetness, making it popular with various groups, especially children.	Through layer cakes, students can observe its distinctive shape, which is a rectangle. This shape is very relevant to be introduced to students in learning the concept of flat buildings, especially rectangles.
Talam Cake 	Talam cake is a traditional Indonesian snack made from a mixture of rice flour, sago flour, coconut milk, and sugar, then steamed deep in a square-shaped baking dish, then cut into square pieces to serve.	Through talam cakes, students can observe the shape of the square-shaped talam cake pieces. It can be used in math learning on the concept of square flat build

Based on some of the traditional snacks in the table above, it can be concluded that these traditional snack forms can be used as mathematics learning because these shapes

resemble certain flat shapes. Learning that involves students' lives is expected to be able to provide a sense of enthusiasm in learning mathematics meaningfully.

CONCLUSION

Fundamental Finding : Learning mathematics at the elementary school level that integrates local culture or known as ethnomathematics is an efficient and effective approach to increase students' interest in learning mathematics. This finding highlights the power of contextual learning through cultural relevance, particularly by incorporating elements familiar to students' daily lives. **Implication :** This approach can also make math material that is often considered difficult and boring easier to understand because it is directly related to the surrounding culture such as the traditional snacks that students often encounter. As a result, educators can utilize familiar cultural references to demystify abstract mathematical concepts and enhance student engagement and comprehension. **Limitation :** The application of ethnomathematics in the learning process not only adds insight into culture, but can also make it easier for teachers to encourage improvement in student learning outcomes. However, while the potential is evident, the statement implies a generalized benefit without detailing specific constraints, such as varying regional resources or teachers' preparedness in integrating ethnomathematical content effectively. **Future Research :** Further exploration is needed to examine how the use of different local cultural elements across various regions affects the efficacy of ethnomathematics in diverse learning environments. Future research should also investigate long-term impacts on conceptual understanding and cultural identity development among students.

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***Uvi Karmila (Corresponding Author)**
Indraprasta PGRI University, Indonesia
Email: uvikarmila98@gmail.com

Supardi Uki Sajiman
Indraprasta PGRI University, Indonesia