

Ethnomathematical Exploration at Home Panjalin Custom in Majalengka

Yeni Dwi Kurino^{✉1}, Ady Akbar²

^{1,2}Basic Education Study Program, Indonesian University of Education, Bandung

✉ yenidwikurin@gmail.com

Abstract. Ethnomathematics is a mathematical concept that exists in a culture. The presence of culturally nuanced mathematics will make a major contribution to mathematics learning. The purpose of this study was to identify and describe the mathematical objects contained in the Panjalin Traditional House and their use in learning mathematics. This research is a qualitative research with ethnographic method. The instruments used in this research are documentation, interviews and literature studies directly to the respondents. The data analysis technique was carried out by data reduction, data presentation and data analysis and data exposure. The results of the study indicate that the traditional game of marbles has ethnomathematics related to mathematical concepts including geometric concepts such as cubes, blocks, squares, rectangles, and triangles. These mathematical concepts can be used to introduce and understand the concepts of geometry and distance through local culture. **Keywords:** Ethnomathematics, culture, Panjalin traditional house.

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INTRODUCTION ~ Mathematics learning plays an important role in the development of science and technology, both as a tool in the application of other sciences and in the development of mathematics itself. Education in elementary schools includes various subjects, one of which is mathematics. Mathematics is one of the basic sciences that plays an important role both in the development of science and in shaping the human personality. Recognizing the importance of learning mathematics in schools, in Law No. 20 of 2003 concerning the National Education System (National Education System) Article 37 it is emphasized that "Mathematics is one of the compulsory subjects for students at the primary and secondary education levels". Mathematics subjects need to be given to all students starting from elementary school to equip students with the ability to think logically,

analytically, systematically, critically, and creatively, as well as the ability to work together.

The purpose of learning mathematics according to the 2013 Curriculum (Kemendikbud, 2013) emphasizes the modern pedagogic dimension in learning, namely using scientific approach (scientific). In learning mathematics, the activities carried out for meaningful learning are observing, asking, trying, reasoning, presenting, and creating.

Research conducted by Mutia (2017: 83) found difficulties in learning mathematics in the form of difficulties in mastering concepts, finding, and utilizing the formula for the surface area of cubes and blocks that occur due to memorizing ready-made formulas using alternative solutions, namely: (a) Utilizing geometry applications; (b)

Promote prerequisite materials on flat shapes; (c) Applying discovery-based learning methods and resources; and (d) Get used to doing practice questions. This is in line with the opinion of Abdurrahman (2008: 202) in his research which says that from various fields of study, mathematics is the most difficult field of study.

As a professional mathematics teacher, you must be able to carry out your obligations not only teaching but also must use learning models that make learning more meaningful, one of which is by linking the mathematics lessons taught with the life around them. Things that are real and related to the daily experiences of students can be used as interesting learning resources (Lubis and Widada 2020). According to Ulya and Rahayu (2017) if mathematics learning continues like that, it will have an impact on the low interest of students in learning mathematics. Because mathematics in schools has a purpose not only to equip students to prepare for school exams and national exams, but the purpose of learning mathematics at school is to prepare students to be able to use mathematics in everyday life, for example cultural elements (Asep Gilang Resfaty, Ipah Muzdalipah, 2019). Culture-based learning in mathematics learning is one of the innovations in eliminating the notion that mathematics tends to be rigid and connects it with something interesting such as culture so that people's assumptions about mathematics will be flexible (Maternity et al. 2018). Culture is something that we cannot avoid, because with that culture a community becomes one unit with various manifestations produced (Jumri 2019). Culture is also called a

habit that contains important values that are passed down from generation to generation. 2019). Culture-based learning in mathematics learning is one of the innovations in eliminating the notion that mathematics tends to be rigid and connects it with something interesting such as culture so that people's assumptions about mathematics will be flexible (Maternity et al. 2018). Culture is something that we cannot avoid, because with that culture a community becomes one unit with various manifestations produced (Jumri 2019). Culture is also called a habit that contains important values that are passed down from generation to generation. 2019). Culture-based learning in mathematics learning is one of the innovations in eliminating the notion that mathematics tends to be rigid and connects it with something interesting such as culture so that people's assumptions about mathematics will be flexible (Maternity et al. 2018). Culture is something that we cannot avoid, because with that culture a community becomes one unit with various manifestations produced (Jumri 2019). Culture is also called a habit that contains important values that are passed down from generation to generation. 2019). Culture-based learning in mathematics learning is one of the innovations in eliminating the notion that mathematics tends to be rigid and connects it with something interesting such as culture so that people's assumptions about mathematics will be flexible (Maternity et al. 2018). Culture is something that we cannot avoid, because with that culture a community becomes one unit with various manifestations produced (Jumri 2019). Culture is also called a habit that

contains important values that are passed down from generation to generation. Culture-based learning in mathematics learning is one of the innovations in eliminating the notion that mathematics tends to be rigid and connects it with something interesting such as culture so that people's assumptions about mathematics will be flexible (Maternity et al. 2018). Culture is something that we cannot avoid, because with that culture a community becomes one unit with various manifestations produced (Jumri 2019). Culture is also called a habit that contains important values that are passed down from generation to generation.

Geometry is a form of geometric shapes and flat shapes that are often found in mathematics. Therefore, to make this geometry material more interesting, it takes a learning method related to culture that is often encountered. This learning method that links cultural elements with mathematics is called Ethnomathematics. Ubayanti, Lumbantobing, and Manurung (2016) say that mathematics is part of culture and is universal. Hardiarti (2017) says that learning with concrete ethnomathematical objects can support and assist students in understanding abstract mathematics. Noto, Firmasari, & Fatchurohman (2018) said that ethnomathematics is a good learning strategy in understanding and learning mathematics while at the same time fostering students' love for culture.

The study of geometry is part of the educational curriculum taught from elementary school to college level

(Huda, 2018). Therefore, geometry is considered important for a deeper study. Therefore, in this study, the researcher raised the title "Ethnomathematical Exploration in the Panjalin Traditional House. Where in this study will be associated with learning mathematics with Panjalin traditional house. The aim is to find out the relationship between the Panjalin Traditional house and mathematics, the use of the Panjalin Traditional house in learning mathematics and to remind the public of this Panjalin Traditional house.

METHOD

This type of research is a qualitative research with an ethnographic approach. Qualitative research according to Gunawan and St.Suwarsono (2019) is research that uses a naturalistic paradigm, it can be used because researchers want to intensively participate in the field, carefully recording what happened, conducting reflective analysis of various documents found in the field, and conducting detailed research. The method used in this research is ethnography, where the researcher only makes observations through documentation, interviews and literature studies related to the Panjalin traditional house. This type of research is qualitative which only describes how the Panjalin traditional house is and its relationship with mathematics.

In this study, an ethnographic approach was used to describe, explain and analyze mathematical concepts and modeling contained in the traditional village of Panjalin village. The interview technique used in this study is an unstructured interview, where the

interview guide is only written in outline.

RESULTS AND DISCUSSION

The Panjalin Traditional House is located in Panjalin Village, Panjalin

Village, Cikalong Wetan. This location is about 23 km from Majalengka. The distance from the main road to the Panjalin traditional house is 200m. The main entrance gate as shown in the following picture:



Figure 1. The entrance gate of Panjalin village



Figure 2. Panjalin traditional house

The Panjalin Traditional House was built by Raden Sanata and is one of the proofspread of Islam religion Islam (Source: Interview Documentation). This Panjalin traditional village house is located in the middle of the Panjalin village settlement. The house is in the

form of a house on stilts with 16 wooden support poles, which are obtained from one main wood so that it is likened to 17 rak'ahs in fardu prayers, measuring 9 x 9 m, and occupies an area of 172 m². The house is divided into two parts: the vestibule and the inner room. The

traditional village house of Panjalin village has two main parts, the first is the front room, then the partition (separator) with the main room. The first room is the front room where you can rest and relax for a while, then the larger family room is a place to meet family members. The design of the roof and walls of the traditional village house of Panjalin village is mostly in the form of geometric elements related to mathematical relationships.

The ethnomathematics found in the Panjalin traditional village is more directed at cultural forms that are artifacts. This is because what can be studied in the context of the traditional village of Panjalin village are the artifacts that exist in the village. Thus, it is culture that provides a coherent

framework for organizing one's activities and enabling one to predict the behavior of others. Some geometric elements that we can find in the Traditional Village Kampung Panjalin|| Majalengka Regency are as follows: The front view is as shown in Figure 3 that the geometric elements are very thick in seeing the Traditional Village Kampung Panjalin|| Majalengka Regency starting from the wall that is in the form of data structures. starting with rectangles and squares. The inner walls are also very thick with geometric nuances, namely space geometry and plane geometry. If we dance the center line, the left and right segments are the result of reflection or what is known as transformation geometry on the reflection material about the y-axis. like the picture below:



Figure 3. The interior of the Panjalin traditional house

Ethnomathematics is basically Mathematics that is practiced among identified cultural groups such as national tribal communities, labor groups, children of certain age groups and professional classes" (Rosa & Clark, 2011) (Albanese & Perales Palacios,

2015) (Mosimege, 2012 Ethnomathematics related to mathematical concepts according to D'Ambrosio (in Wahyuni et al., 2013) the study of ethnomathematics in mathematics learning covers all fields of architecture, weaving, sewing,

agriculture, kinship, ornamentation, and spiritual and religious practices are often in harmony with the pattern occurs in nature or commands a system of abstract ideas. Thus, mathematics that arises and develops in society and in accordance with local culture, is the center of the learning process and teaching method (Abdullah, 2017) (Rosa et al., 2017).

CONCLUSION

Based on the results of the research conducted, it can be concluded that the Panjalin Traditional house has a close relationship in learning mathematics or commonly referred to as ethnomathematics-based learning. The ethnomathematical elements contained in the concept of geometry are building blocks, squares, rectangles, and others.

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