Ethnomathematics Textbook Material on Geometry and Measurement in Elementary Schools

Vina Amilia Suganda[✉1], Zahra Pramutia[2], Bunda Harini[3], Dwi Cahaya Nurani[4], Mazda Leva Okta Safitri[5], Putri Lestari[6], and Farizki Chaniago[7]

[1,2,3,4,5,6,7]PGSD, Universitas Sriwijaya, Palembang, Indonesia

✉ vinaamilia@fkip.unsri.ac.id

Abstract. Ethnomathematics learning is considered to be able to improve the reasoning power of elementary school level students because ethnomathematics learning describes all the things that form the cultural identity of a group which will stimulate students' reasoning power because with ethnomathematics it is easier for students to remember the essential characteristics of an object to be studied. Mathematical material that is presented by relating to the culture in the area where students live will be easier for students to understand. This is a consideration for researchers to use the Ethnomathematics approach which is presented in the form of a textbook. The results of this research obtained an Ethnomathematics-based textbook with a percentage of 94.16% in the Very Valid category. Next, in the trial stage, an average score of 96.10% was obtained from 12 class V students at SD Negeri 24 Pagar Alam in the very practical category.

Keywords: Ethnomathematics, geometry and measurement, elementary schools

How to Cite: Suganda, V.M.A., et al. (2024). Ethnomathematics Textbook Material on Geometry and Measurement in Elementary Schools. *Proceeding The 6th International Conference Elementary Education, 6*(1), 543-546.

INTRODUCTION

UU number 5 of 2017 recognizes the importance of education as a part of Indonesian culture. Education is considered a way to advance and preserve Indonesian culture. The Role of Education in the Advancement of Culture: This law encourages the role of education in the advancement of culture. Education is expected to help people better understand, appreciate and preserve Indonesian culture. Culture-Based Education: This law creates a legal basis for developing culture-based education. This can include teaching local culture, traditional arts, and cultural values in the educational curriculum. Maintenance and Preservation of Culture. This law also emphasizes the need for education in maintaining and preserving Indonesian culture. Education is expected to help people maintain and care for their cultural heritage

Ethnomathematics learning is considered to be able to improve the reasoning power of elementary school level students because ethnomathematics learning describes all the things that form the cultural identity of a group which will stimulate students' reasoning power because with ethnomathematics it is easier for students to remember the essential characteristics of an object to be studied [1]. Geometry and measurement material is one of the mathematics learning materials that is characterized by an object, namely flat shapes and space. In studying geometry material, students really need a mature concept, namely being able to apply their geometric skills such as visualizing, recognizing various flat shapes and spaces, describing images, sketching shapes, labeling certain points, and the ability to recognize the differences and similarities between shapes [2].

Mathematics material that is presented by relating to the culture in the area where students live will be easier for students to understand because it is related to the culture they are familiar with. Previous research on ethnomathematics, including [3], implemented an ethnomathematics approach in mathematics learning. [2] Implementing ethnomathematics based on local ludruk culture as a geometry learning resource at the elementary school level.

METHOD

This article is a literature and documentation review, which are the steps used to collect, evaluate and compile information from various literature and document sources [4], [5]. [6] A literature review is a comprehensive overview of research that has been conducted on a specific topic to show readers what is already known about the topic and what is not yet known to find rationale for research that has been conducted or for ideas for further research. Literature studies

can be obtained from various sources, including journals, books, documentation, the Internet and libraries.

RESULTS

The discussion of Geometry and Measurement in Elementary Schools in this research is by the 2013 Curriculum, namely in high grades, especially in grades IV and V; even this semester, there is material about plane and space shapes. A flat shape is a two-dimensional shape bounded by straight or curved lines. Square, rectangle, triangle, parallelogram, trapezoid, kite and rhombus are flat shapes. By the fourth grade mathematics teacher's book, the scope of learning about flat shapes is squares, rectangles and triangles.

In mathematics, shapes with volume contents are known as space shapes. Three-dimensional shapes are another name for space shapes. Cubes, cuboids, prisms, pyramids, cones, and cylinders are examples of geometric figures. There are many geometric shapes, including specific shapes of blocks, rectangular prisms, and cylinders.

Ethnomathematics comes from the word "Ethnomathematics" with three syllables: ethno, which means connected to culture; mathema, which refers to learning mathematics; and tics, which means art or technique [7]. [8] Defines ethnomathematics as the cultural anthropology of mathematics of mathematics and mathematics education. Ethnomathematics is mathematics linked to existing culture by respecting and respecting the culture that develops in society [9].

According to [10], ethnomathematics is a method used to learn mathematics by involving activities or culture of the surrounding area to make it easier for someone to understand it. Ethnomathematics-based learning must be implemented in elementary schools. According to [11], Ethnomathematics-based education has advantages, including 1) Students easily accept mathematics because it becomes more realistic, 2) Introducing culture to students, which is expected to maintain interest in their culture.

Based on the explanations above, it can be concluded that the advantage of ethnomathematics learning is that mathematics will be more meaningful because mathematics and the surrounding culture simultaneously make mathematics more accepted by students. The following is an example of Ethnomathematics in one area, namely Pagaralam. By getting to know traditional houses, namely Baghi House, the Besemah community in Pagar Alam has a conventional house known as Rumah Baghi. This Baghi house is characterised by its roof being horn-shaped and tapered. Baghi's house is built on stilts and rises 2 meters above the ground. Usually, the area under the house is used to store firewood. Apart from that, the homeowner's security is to prevent wild/wild animals from entering the home. Remember that in ancient times, the environment was still quiet and surrounded by forests [12].

Figure 1. Baghi House
Source:kultur.kemdikbud.go.id

According to [13], this traditional house building is sturdy. The construction starts with high-quality wood (such as Entenam wood) from local forests. Wood is a foundation for wood carvings on walls, floors and other surfaces. Apart from that, because of this team wood, the Baghi House is known to be very strong, not only sturdy but also earthquake resistant. The pillars of Baghi House are attached to the rock. As a result, during an earthquake, the columns adjust dynamically enough to prevent the building from collapsing. The bag house consists of a flat structure and a room structure that can be seen between them.

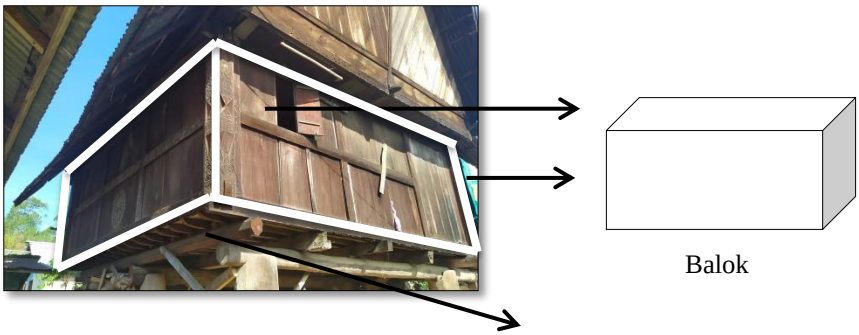

Figure 2. Walls of Baghi's House
Source: FB (Pesona Sriwijaya)

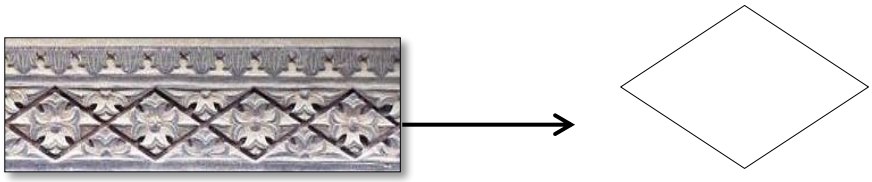

Figure 3. Baghi House Carvings
Source: Pagaralam Tourism

CONCLUSION

Ethnomathematics learning makes mathematics more meaningful because mathematics and the surrounding culture simultaneously make mathematics more accepted by students. Mathematical material presented by relating the culture in the area where students live will be more accessible for students to understand because it relates to the culture they are familiar with.

ACKNOWLEDGMENTS

Thank you to Sriwijaya University for allowing me to be one of the recipients of a scientific research grant in 2023. This article is one of the additional outputs of this grant.

REFERENCES

Situmorang, A. S., & Naibaho, T. (2020). Etnomatematika Pada Pembelajaran Matematika Tingkat SD.

Yuliani, S. B. (2022). Implementasi Etnomatematika Berbasis Budaya Lokal Ludruk sebagai Sumber Belajar Geometri pada Jenjang Sekolah Dasar. CIRCLE : Jurnal Pendidikan Matematika, 2(01), 1–14. https://doi.org/10.28918/circle.v2i01.4216

MATEMATIKA DITINJAU DARI GAYA BELAJAR SISWA SDN MANGUNJIWAN 1 DEMAK. JRPD (Jurnal Riset Pendidikan Dasar), 5(1), Article 1. https://doi.org/10.26618/jrpd.v5i1.7294

Smith, J. (2018). "Trends in Contemporary Research: A Comprehensive Review."

Johnson, A. et al. (2020). "Advancements in Technology: A Literature Review."

Denney, A. S., & Tewksbury, R. (2013). How to write a literature review. Journal of criminal justice education, 24(2), 218-234.

Ajmain, A., Herna, H., & Masrura, S. I. (2020). Implementasi Pendekatan Etnomatematika Dalam Pembelajaran Matematika. SIGMA: Jurnal Pendidikan Matematika, 12(1), Article 1. https://doi.org/10.26618/sigma.v12i1.3910

Saparuddin, A., Sukestiyarno, Y. L., & Junaedi, I. (2019). Etnomatematika Dalam Perspektif Problematika Pembelajaran Matematika: Tantangan Pada Siswa Indigenous. Universitas Negeri Semarang, 910–916.

Nasryah, C,V. & Rahman, A,A. (2020). Ethnomathematics (Matematika dalam perspektif Budaya). Sidoarjo. Uwais Inspirasi Indonesia 24

Sarwoedi, Marinka, D. O., Febriani, P., & Wirne, I. N. (2018). Efektifitas Etnomatematika dalam Meningkatkan Kemampuan Pemahaman Matematika Siswa. Jurnal Pendidikan Matematika Raflesia, 03(02), 171–176.

Harum, Oktarine Melly Aminah and Febryano. Indra Gumay and Wulandari. Christine and Hidayat. Wahyu (2019) Pelestarian Ghumah Baghi (Rumah Tradisional Berbahan Dasar Kayu) di Kelurahan Pelang Kenidai, Kota Pagaralam. Jurnal Hutan Tropis, 7 (2). pp. 216-224. ISSN 2337-7771

Rinaldi, Z., Purwantiasning, A.W., & Nur'aini, R.D. 2015. Analisis Konstruksi Tahan Gempa Rumah Tradisional Suku Besemah Pagaralam Sumatera Selatan. Prosiding Sains dan Teknologi. 15(41): 60-87.

White, A. L. (2018). Australian Mathematics Literacy Perspectives: Assessment. Southeast Asian Mathematics Education Journal, 8(1), Article 1. https://doi.org/10.46517/seamej.v8i1.65