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ETHNOMATOLOGY STUDY ON THE STRUCTURE OF HISTORICAL ORNAMENTS OF MAIMUN PALACE

Dwi Cahyosaputra [1*]
[1]*Universitas Sumatera Utara*
*Corresponding Author. E-mail: dwicahyosyaputra@gmail.com

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ABSTRACT

Ethnomathematics strengthens the relationship between mathematics and culture. The concept and culture of mathematics are inevitable in everyday life. Castles can serve as symbolic representations of certain cultural contexts. The Maimun Royal Palace is an example of how the city of Medan is represented culturally. This paper examines and analyzes the mathematical component of the Maimun Palace's ethnographic method for qualitative descriptive research. According to research, this method aims to provide a comprehensive explanation of all mathematical concepts contained in the Maimun Palace. Bishop's important actions at the Maimun Court demonstrate these mathematical concepts and components. The three main objectives of this research are as follows: (1) collecting and reviewing relevant literature; (2) providing an explanation of the results; and (3) provide an explanation of specific aspects of Bishop's mathematics. Today, flat shapes such as triangles and semicircles are used, along with the mathematical concepts of symmetry and geometric transformation, in carving motifs; The majority of geometric patterns and ornaments in this traditional house are in the form of squares, rectangles, rhombuses, and triangles.

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INTRODUCTION

(2019, Rosita). Mathematics is an interdisciplinary science that emerges from the development of several fields of modern science and technology. Mathematics is also a collection of different abstract ideas or ideas that are methodically refuted through the use of logic. Instead of using mathematics as a tool to achieve certain learning goals, mathematics is used to teach life skills (Soedjadi, 2000). (2019, Rosita).

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Mathematics and religion are two aspects of daily life that cannot be denied. Ethnomathematics, in the words of Ambrosio (1985), is the relationship that is established between mathematics and philosophy, or vice versa. Ethnomathematics is derived from the terms "ethno" and "mathematics", where "ethno" means civilization or ethnic grouping. It can be clarified that all ideas, reasoning methods, and mathematical applications created by religious people are included in the mathematical ethnomate. According to ethnomathematics, an object that is classified as secular that contains mathematical ideas relevant to modern culture is called an object.

Buddhism according to Koentjaraningrat (1985, reference in Hasanuddin (2017), is the whole of human beliefs, concepts, and works within the framework of people's lives everyday. It is undeniable that religion permeates all human endeavors, and every location celebrates life. Typically, according to the Ministry of Education and Culture (2017), the diversity of times reflects Indonesian nationality. Language, knowledge systems, social structures, daily life systems, lifelong learning systems, religion, and the arts are all important. elements of the daily life of a nation, according to Noah, Z.M. (2016). The researcher will evaluate the quality of education in the eastern Sumatra province so far by paying special attention to this

The mosque can serve as a symbol of the entire Islamic group around it in daily life; for example, the mosque in Madara may represent the southern province of Sumatra (Pur, 2021). Ramadissa et al. (2017) found that the eastern part of Sumatra Island is one of the provinces that has many traditional houses with various types categorized based on their shape and location. The Maimun Palace is not used as a private residence, but is used as a meeting place for the Malay community of North Sumatra. The coronation hall of the local traditional head is called this traditional house. Density hall, sari hall, and so on are other names for him. North Sumatran Malay traditional ceremonies can also be done in this traditional house.

It can be concluded from what has been stated above that mathematical progress is essentially inseparable from the existing society. The purpose of this study is to study and analyze mathematical elements in traditional houses in Upper Sulawesi Province, especially in the Maimun Palace. The purpose of this study is to obtain mathematical standards obtained from the basic activities of the Bishop in the residence mentioned above. For this reason, this research is entitled "Economic Analysis of the Structure of Kingdom Buildings in the East Asian Region"

RESEARCH METHOD

This study conducted a quantitative description using the ethnographic method. Descriptive research is a type of research used to describe, explain, and demonstrate a certain phenomenon, event, or fairy tale, according to Soehartono (2002). The qualitative research method according to Sugiyono (2016) is a creative approach that incorporates more creative (but less statistical) research procedures. Called the interpretive approach. Graphs, text, or numbers—not just numbers—can be used to describe qualitative data (Sugiyono, 2017).

Therefore, a research methodology that uses quantitative data and is subsequently carried out descriptively is called qualitative descriptive research (Sendari, 2019). Furthermore, this study uses ethnographic methodology; therefore, its main purpose is to illustrate, assess, and describe the current

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situation of the country (Mawardi, 2019). Therefore, to gain insight into the mathematical components included in the Mamun Palace, this research will combine empirical and theoretical approaches.

In this study, case studies, documentation, and observation are the approaches used to collect data. Research assistants in ethnographic fieldwork can provide significant assistance in data processing and community education, as explained by Suwartono (2014) in his book. Abdullah (2015) stated that observation is an objective empirical research method that produces findings. Morris (2016) described observational testing as a technique to find anomalies to evaluate other theories or concepts using tools and samples. Furthermore, observation is a collection of human observations of their environment. For all the data obtained, documentation is essential. Document analysis can help find the information needed for research even if the output is not primary data (Abdullah, 2015).

Three main activities were completed in this study: (1) collecting and evaluating literature; (2) find and evaluate samples of Bishop's mathematical activities; and (4) find examples of typical mathematical activities. The content of this traditional house is compiled from books, articles, and instructional videos. This data will then be collected, examined, and assessed. Bishop focuses on the following arithmetic exercises: observing, playing, and explaining in relation to the idea of equilibrium; playing, and observing in relation to social interaction. The main focus of this math lesson is on the construction and ornaments of the geometrically connected Maimun Palace.

RESULTS AND DISCUSSION

One of the relics and evidence of wealth owned by a customary area that has become a cultural heritage. In addition, traditional houses are also one of the main symbols of the country (Andrini, 2021).

Maimun Palace, or Sultan of Delhi, is the symbol of the city of Medan in the Provincial Union. Maimun Palace with a circumference of 2,772 meters has 30 rooms. The main part, left, and cannon shells are the three sides of the Maimun Mosque which consists of two floors. The Almasun Mosque or also known as the Great Mosque of Medan is located next to the palace facing east. Due to its unique interior design that connects Delhi, Islam, Spain, India, and Ancient Malayu, Tourists are a great asset to the Imperial Palace.

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Picture 1 : Maimun Palace Kingdom

Reminiscent of the Taj Mahal, the stunning surroundings reflect the essence of Maimun Palace in India. Many columns, heights, and large doors with a European feel can be found in this country. Chairs, tables, lamps, doors, windows, and cabinets followed. A Spanish translator designed this architectural element. Finally, the tall and wide doors can be seen as an example of the Dutch architectural style. On the upper stairs there is a prosthesis written in Dutch and Latin.

In ordinary interactions, as well as in warning indicators such as yellow, green, and red, Malay is used. The language used in the commemoration is Malay. The color green symbolizes Islam, red symbolizes customs, and yellow symbolizes awareness and wisdom. The arcade, or arched roof, made of similar Persian pillars, had an impact on Islam. Middle East buildings are several. The bright yellow color of the Sultan is located on a small stage that is part of the mosque once you enter the building.

Figure 2 ; Mariam Puntung

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A yellow wooden house with a cannon sympathy area attached to the main structure. The stock takes place in a simple traditional house that has chrysanthemums watching over it. The two parts of the cannon body were separated. Lingga Karo Village is at the end, and Sita Maimun is in the middle. It is said that sound will be produced by placing the ear next to the bottom of the hole. Humans have the ability to understand various worlds. In the past, people began to understand that they could receive gifts from God. Only the sound of the sound is recognized by some individuals.

The construction, material selection, building models, and ornaments of the Maimun Palace all combine meaning and philosophy. The mathematical ideas of sample preparation, thermodynamics, construction engineering, and building design can all be understood through the lens of construction theory. Basic building blocks such as angular strategies, lengths, and other geometric ideas are taught in today's formal education. However, this set of materials may be more durable and durable than the materials they use today.

ETHNOMATHEMATICS AT MAIMUN PALACE

The architecture, material selection, construction, building models, and decoration of the Maimun Palace are all influenced by philosophy and art. It is supported by the construction of the building essay palace, measurement, sample loading and calculation of mathematical concepts. Today, basic elements such as angular strategies, lengths, and other geometric ideas are discussed in formal schools. However, these materials may be more resilient and durable than the materials they now use.

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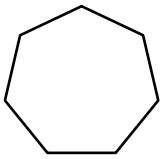
It	Parts/drawings	Mathematical concepts/principles
1		 Area = πr2 $Keliling = 2\pi r$ Circle
2.		 $L = n.\frac{1}{2}r^2 \sin\left(\frac{360^0}{n}\right)$ A-7 K=
3.		Area = p × l Circumference = 2(p + l) Rectangle
4.		Volume = 4 × π × r3 3 Area = 4 × π × r2 Was

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5.		$Volume = \pi r2t$ $Luas\ Permukaan = 2\pi r(r + t)$ $Luas\ Selimut = 2\pi rt$ $Luas\ Permukaan\ Tanpa\ tutup$ $= \pi r(r + 2t)$ Tube
6.		$Luas = s \times s$ $Keliling = 4 \times s$ Square
7.		$(a + b)$ $Luas = \times 2t$ $Keliling = a + b + c + d$
8.		$Luas = 1 \times \pi \times r2\ 2$ $Keliling = \pi \times r$ Semicircle

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9.		$K = a + b + c$ 1 $Luas = 2\ a \times t$

CONCLUSION

Previous findings and discussions hinted at the application of mathematical ideas in the arrangement of the Islamic universe. Bishop's investigation highlighted the ethnomatomics of this house. Bishop's enumeration has several important examples, but one that stands out is (1) the counting, which is comparable to what the largest number of columns represents in the Bishop's analysis findings inspired further research into the theme, ceiling decoration, and ornamentation of the Maimun Palace. . Almost all decorations and ornaments in this traditional house are based on the principle of mathematical symmetry, both applied proportionally on one side and on both sides. In addition, the architectural and decorative styles of the Imperial Palace, such as the structure of triangular houses, lengths, squares, and buildings.

To conduct a secret study on the construction of the Maimun Palace or go on a study trip while still paying attention to the religious beliefs of the people of North Sumatra and the Maimun Palace, it may be a good idea to conduct more in-depth research. In addition to collecting more data, the next generation of researchers will also be able to conduct more comprehensive ethnomathematical studies. In addition to what has been discussed in this study, there can be a concentrated discussion about the actions of the Basic Bishop, such as playing, meditating, and bowing.

REFERENCES

Abdullah, M. (2015). METODE PENELITIAN KUANTITATIF (1st ed.). Aswaja Pressindo. Aditya, D. Y. (2018). Eksplorasi Unsur Matematika dalam Kebudayaan Masyarakat Jawa. *Formatif : Jurnal Ilmiah Pendidikan MIPA*, *7*(3), 253–261.https://doi.org/10.30998/formatif.v7i3.2236

Irwansyah. (2015). Akulturasi Budaya Eropa Pada Interior. *Journal Proporsi*, *1*(1), 1–15.

Mahdayeni, M., Alhaddad, M. R., & Saleh, A. S. (2019). Manusia dan Kebudayaan (Manusia dan Sejarah Kebudayaan, Manusia dalam Keanekaragaman Budaya dan Peradaban, Manusia dan Sumber Penghidupan).

Nisa, R. (2020). Eksplorasi Etnomatematika pada Batik Pamiluto Gresik. *Briliant: Jurnal Riset Dan Konseptual*, *5*(3), 442–448. https://doi.org/10.28926/briliant.v5i3.462

Noto, M. S., Firmasari, S., & Fatchurrohman, M. (2018). Etnomatematika pada sumur purbakalaDesa Kaliwadas Cirebon dan kaitannya dengan pembelajaran matematika di sekolah Ethnomathematics at the sumur purbakala Kaliwadas Village of Cirebon and relationshipwith mathematics learning in school. *Jurnal Riset Pendidikan Matematika*, *5*(2), 201–210.

Pentury, H. J. (2017). Pengembangan Kreativitas Guru dalam Pembelajaran Kreatif PembelajaranRichardo, R. (2016). Peran Ethnomatematika dalam Penerapan Pembelajaran Matematika. *Jurnal LITERASI*, *7*(2), 118–125.

Santoso, G., Yulia, P., & Rusliah, N. (2020). Validitas Lembar Kerja Peserta Didik (LKPD) Berbasis Etnomatematika pada Materi Geometri dan Pengukuran. *PYTHAGORAS: Jurnal Program Studi Pendidikan Matematika*, *9*(2), 165–172.

Tadbir: Jurnal Manajemen Pendidikan Islam, *7*(2), 154–165.https://doi.org/10.30603/tjmpi.v7i2.1125

Teng, H. M. B. A. (2017). Filsafat Kebudayaan dan Sastra. *Jurnal Ilmu Budaya*, *5*(1), 69–75. Wulandari, I., & Puspadewi, K. R. (2016). Budaya Dan Implikasinya Terhadap Pembelajaran

Matematika, Jurnal Santiaji Pendidikan, 6 (1), 31-37

https://www.nelti.com/publications/129201/budaya-danimplikasinya-terhadap-pembelajaran-matematika