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Integrating Malay Cultural Practices into Mathematics Learning: Ethnomathematical Approaches Across Indonesia and Malaysia

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ABSTRACT

This study is grounded in the premise that mathematical ideas are inseparable from cultural practices and that ethnomathematics can strengthen the relevance of school mathematics for learners in multicultural contexts. It addresses the persistent gap between students' everyday cultural experiences and formal mathematics instruction in Indonesia and Malaysia, where mathematics is frequently presented as culturally neutral and decontextualized. The study aims to explore how Malay cultural heritage can be systematically integrated into mathematics learning and to identify culturally situated mathematical concepts that may support students' conceptual understanding. Employing a qualitative ethnographic design, the researchers collected data through semi-structured interviews with teachers, students, and community members, participatory classroom observations, document analysis of instructional materials, and the examination of cultural artefacts. Data were transcribed and analyzed thematically through iterative reduction, categorization, and interpretive comparison across sites. The findings indicate that Malay architectural artefacts provide rich mathematical representations, particularly geometric forms and measurement-related concepts. Specifically, Maimoon Palace and Istana Jahar exhibit recurring structures such as rectangles, triangles, circles, semicircles, hexagons, octagons, and rhombuses, which align directly with curricular topics including perimeter, area, and volume. Overall, the study concludes that integrating Malay cultural artefacts into mathematics instruction offers a pedagogically robust and culturally responsive approach, with implications for enhancing engagement, supporting conceptual learning, and reinforcing cultural appreciation in the context of globalization

Integrasi Budaya Melayu dalam Pembelajaran Matematika: Pendekatan Etnomatematika di Indonesia dan Malaysia

Kata Kunci:

Budaya Melayu, Pembelajaran Matemayika, Etnomatematika

ABSTRAK

Studi ini berangkat dari premis bahwa gagasan-gagasan matematis tidak terpisahkan dari praktik budaya dan bahwa etnomatematika dapat memperkuat relevansi pembelajaran matematika sekolah bagi peserta didik dalam konteks multikultural. Penelitian ini menyoroti kesenjangan yang masih bertahan antara pengalaman budaya sehari-hari peserta didik dan pembelajaran matematika formal di Indonesia dan Malaysia, di mana matematika kerap dipresentasikan sebagai pengetahuan yang netral secara budaya dan terlepas dari konteks. Penelitian ini bertujuan mengeksplorasi bagaimana warisan budaya Melayu dapat diintegrasikan secara sistematis ke dalam pembelajaran matematika serta mengidentifikasi konsep-konsep matematika yang berakar pada budaya yang berpotensi mendukung pemahaman konseptual peserta didik. Dengan menggunakan desain kualitatif etnografis, peneliti mengumpulkan data melalui wawancara semi- terstruktur dengan guru, peserta didik, dan anggota komunitas, observasi partisipatif di kelas, analisis dokumen terhadap bahan ajar, serta kajian terhadap artefak budaya. Data ditranskripsi dan dianalisis secara tematik melalui proses reduksi, kategorisasi, dan perbandingan interpretatif secara iteratif lintas lokasi. Hasil penelitian menunjukkan bahwa artefak arsitektural Melayu menyediakan representasi matematis yang kaya, terutama terkait bentuk-bentuk geometri dan konsep pengukuran. Secara spesifik, Istana Maimoon dan Istana Jahar menampilkan struktur berulang seperti persegi panjang, segitiga, lingkaran, setengah lingkaran, heksagon, oktagon, dan belah ketupat, yang selaras langsung dengan topik kurikulum seperti keliling, luas, dan volume. Secara keseluruhan, penelitian ini menyimpulkan bahwa integrasi artefak budaya Melayu dalam pembelajaran matematika merupakan pendekatan yang kuat secara pedagogis dan responsif secara budaya, dengan implikasi untuk meningkatkan keterlibatan, mendukung pembelajaran konseptual, dan memperkuat apresiasi budaya dalam konteks globalisasi.

1. INTRODUCTION

Background in Study

Mathematics is often perceived as a discipline distinct from the cultural and social aspects of life. In reality, mathematics is intrinsically woven into the fabric of everyday existence, interconnected with various cultures, customs, and traditions across the globe [1]. One approach that elucidates the close relationship between mathematics and culture is ethnomathematics [2]. The term ethnomathematics was first introduced by Ubiratan D'Ambrosio in 1985, referring to mathematical practices that evolve within specific cultural contexts [3]. This concept underscores that mathematics is not merely an abstract science [4]; rather, it is a cultural product shaped by the experiences, traditions, and needs of a given community [5]. Therefore, integrating ethnomathematics into mathematics education can provide students with a fresh perspective, linking them to their own culture and rendering the learning process more contextual and relevant. In Indonesia and Malaysia, two countries with rich and diverse Malay cultural roots, numerous examples exist of the application of mathematics in various cultural facets, ranging from handicrafts and architecture to traditional calculation systems. For instance, in the arts of batik, weaving, carving, and Malay architecture, there are geometric patterns closely associated with mathematical concepts such as symmetry, fractals, and geometry [6]. The Malay communities in Indonesia and Malaysia have long employed mathematical principles in their daily activities; however, in formal mathematics education within schools, these connections are often not explicitly introduced.

The integration of local culture into mathematics education through the ethnomathematics approach is anticipated to create a more enjoyable and relevant learning experience for students, as well as enhance their understanding of mathematical concepts [7-8]. In this context, this research focuses on the integration of Malay cultural practices in Indonesia and Malaysia into mathematics education, which has the potential to enrich mathematics learning, strengthen students' connections to their culture, and increase their motivation to learn mathematics. However, despite this substantial potential, the integration of culture into mathematics education in both countries remains significantly limited. Therefore, it is crucial to conduct more in-depth research on specific methods for incorporating Malay culture into mathematics education in schools.

Research Rationale

The integration of local culture into mathematics education is not only vital for preserving cultural heritage but also offers significant benefits in enhancing the understanding of mathematical concepts. Contextual mathematics education, which links mathematical concepts to the culture and daily lives of students, can increase their engagement and motivation [7, 9]. A study conducted by Bishop (1999) indicates that students who learn mathematics through an ethnomathematical approach tend to exhibit greater interest in mathematics and feel more connected to the material being taught [10]. Furthermore, mathematics education that relates to local culture provides students with the opportunity to comprehend that mathematics is not an isolated discipline but rather a component of the living traditions and cultural experiences within their communities.

Moreover, the integration of culture into mathematics education can also play a role in introducing and preserving cultural diversity. Indonesia and Malaysia are countries characterised by rich cultural diversity, with various ethnic groups, languages, and customs coexisting. By linking mathematics education to local culture, students not only learn mathematics but also develop an appreciation and understanding of the diverse cultures surrounding them [11-12]. This is crucial for fostering mutual respect and reinforcing national identity amidst cultural diversity.

The importance of integrating Malay culture into mathematics education in Indonesia and Malaysia is also influenced by the challenges of globalisation, which leads to increasingly homogenised educational standards. By reintroducing local culture into the learning process, ethnomathematics can serve as a means to mitigate the negative impacts of globalisation on local cultural values [13-14]. Therefore, this research aims to explore ways in which Malay cultural practices in Indonesia and Malaysia can be integrated into mathematics education, as well as how this integration may affect students' understanding of mathematics.

Literature Review

Etnomathematics, as a concept, was first introduced by D'Ambrosio in 1985, who posited that mathematics should not merely be understood as knowledge developed by mathematicians, but also as knowledge that evolves within the cultural and traditional contexts of societies [3]. Since that time, numerous studies have explored the relationship between mathematics and culture within educational contexts. These studies indicate that teaching mathematics in conjunction with local culture can enrich students' understanding and render learning more engaging and relevant to them [8].

In Indonesia, various cultural traditions, such as batik, weaving, and carving, embody mathematical principles that not only serve as artistic expressions but also relate to concepts of geometry, symmetry, and fractals. For instance, the intricate patterns of batik encompass principles of symmetry and geometry that can be utilised to teach fundamental mathematical concepts to students [15]. In Malaysia, handicrafts and architecture similarly contain profound mathematical elements, such as the use of symmetry in design and geometric patterns in the construction of traditional buildings [16-17]. Thus, etnomathematics in both countries holds significant potential to serve as an effective approach in mathematics education.

However, despite this recognised potential, the implementation of etnomathematics within the context of mathematics education in Indonesia and Malaysia remains limited. This challenge is attributed to a deficiency in relevant training, as well as limited resources that support the application of etnomathematics in mathematics learning.

2. METHOD

This study employs a qualitative design with an ethnographic approach to explore the integration of Malay cultural practices in mathematics education in Indonesia and Malaysia. The ethnographic approach has been selected as it allows the researcher to gain a deeper understanding of the ways in which local cultural practices can be incorporated into mathematics teaching, as well as how this process influences students' mathematical comprehension. Ethnography enables the researcher to delve into the experiences and perspectives of teachers, students, and community members involved in the educational process of mathematics that incorporates elements of Malay culture.

Research Participants

The participants in this study are comprised of three primary groups: mathematics teachers, students, and community members possessing knowledge of Malay culture. The mathematics teachers involved in this research are from various primary and secondary schools in Indonesia and Malaysia, particularly in regions significantly influenced by Malay culture. The selection of teachers was based on their willingness to integrate culture into mathematics teaching and their understanding of ethnomathematics.

The students participating in this research are those currently studying mathematics, aged between 12 and 18 years, from the same schools as the teachers involved in the study. The selection of students was conducted to encompass a variety of academic backgrounds in order to obtain diverse perspectives on the influence of Malay culture in mathematics learning.

The community members involved are individuals engaged in traditional Malay cultural activities, such as batik artisans, weavers, and experts in traditional architecture. They will provide valuable insights into the application of mathematical principles in traditional Malay arts and crafts, which can subsequently be integrated into mathematics education.

Research Instruments

The primary instruments employed in this research are semi-structured interviews, participatory observation, and document and cultural artefact analysis. Semi-structured interviews were conducted with teachers, students, and community members to explore their perspectives on the integration of Malay cultural practices in mathematics teaching. These interviews provide participants with the opportunity to express their views and experiences freely, while still being directed towards topics related to the application of culture in mathematics learning.

Participatory observation was undertaken to directly observe how elements of Malay culture, such as batik patterns, woven designs, and traditional architectural structures, are utilised in mathematics instruction within the classroom. This observation aids the researcher in understanding the interactions between teachers and students within a culturally integrated learning context. The field notes generated from this observation will document the teaching processes and the use of culture in elucidating mathematical concepts.

Research Procedure This research will be conducted through several stages involving preparation, data collection, analysis, and reporting of research findings.

In the preparation stage, the researcher will obtain permission from the relevant educational authorities in Indonesia and Malaysia, as well as communicate with the schools that will be involved in the study. The selected schools possess characteristics that are representative of educational environments significantly influenced by Malay culture. Once permission is secured, the researcher will contact teachers, students, and community members to elucidate the research objectives and seek their consent for participation.

Subsequently, in the data collection stage, the researcher will conduct semi-structured interviews with teachers, students, and community members to delve deeper into how Malay culture is integrated into mathematics learning. These interviews will take place outside the classroom context to provide participants with the opportunity to speak more freely about their experiences. In addition to interviews, the researcher will carry out participatory observations in classrooms that incorporate Malay culture into mathematics instruction. During these observations, the researcher will document interactions between teachers and students, as well as the utilisation of cultural elements in the learning process. Data collection will also involve an analysis of the teaching materials used by teachers and the gathering of relevant cultural artefacts.

Once the data has been collected, the next stage is data analysis. Data from the interviews and observations will be transcribed and analysed using a thematic analysis approach. In thematic analysis, the researcher will identify patterns and themes that emerge from the data, such as the ways in which teachers integrate culture into mathematics instruction, students' perceptions of culturally-based teaching, and the impact of cultural integration on understanding mathematical concepts. Data will also be compared across cases from various schools and communities in

Indonesia and Malaysia to identify similarities and differences in culturally integrated teaching approaches.

Furthermore, the researcher will analyse the cultural artefacts collected, such as batik patterns or architectural designs, to explore how relevant mathematical principles relate to concepts such as symmetry, proportion, and hidden patterns within these cultural elements. This analysis will assist the researcher in understanding how local culture contributes to mathematical comprehension within the community context.

After the data analysis, the researcher will compile a report of the research findings that encompasses the main discoveries related to the integration of Malay culture in mathematics learning. This report will also provide recommendations for the development of a mathematics curriculum that is more relevant to the local cultural context, as well as contribute to the development of teaching methods that connect culture with mathematics. To ensure the accuracy of the findings, the researcher will seek feedback from participants regarding the findings obtained and the final report.

Data Analysis

Data analysis techniques are carried out with the following steps: Data reduction is a step to convert recorded or image data into written form and select data that is needed and what is not needed then data presentation includes compiling data and organizing data from information that has been collected so that it can be well organized and meaningful. At this stage, the researchers present data that is the result of data reduction. After the data is presented based on the results of data reduction, then the next is the process of interpreting the data through data analysis. Finally, all data analysis results will be presented which is a representation of the results of answers to the research questions studied.

3. RESULTS AND DISCUSSION

1. Maimoon Palace

Maimoon Palace was built and designed by an architect from Italy in 1888, as one of the heritages of the Deli Sultanate, Maimoon Palace is dominated by the typical Malay yellow and green colors. Maimoon Palace was built on 2,772 square meters of land in the center of the Deli Kingdom or is now located on Jalan Brigadir Jenderal Katamso, Sukaraja Village, Medan Maimun District.

Figure 1. Maimoon Palace

Maimoon Palace itself consists of two floors divided into three parts, namely the main building, the left wing, and the right wing. In the living room (balairung) there is a throne dominated by the color yellow. Crystal lamps are a form of influence from European culture. The same influence also appears in palace furniture such as chairs, tables, and cupboards as well as doors, leading to the 412 m2 hall, a room used for the coronation of the Sultan of Deli or other traditional agendas. Dutch architectural patterns can be seen on the doors accompanied by wide and high windows, and Spanish-style doors are part of the Maimoon Palace. Islamic influences are seen in theform of curves on several parts of the palace roof. The curve in the shape of an inverted ship known as the Persian Curva is often found in buildings in the Middle East, Turkey, and India. In terms of government, it appears that the Maimoon Palace itself has a monarchical character and is ruled by a Deli sultan with the title or grand title of Sri Paduka Tuanku Sultan.

Figure 2. Interior Wall

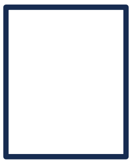
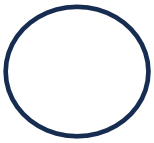
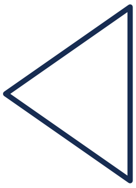
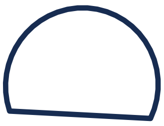
No	Geometric Shapes	Formula
1	 Rectangle	Formula for Area a Rectangle $L = p \times l$ Formula for Perimeter a Rectangle $K = 2p + 2l$
2	 Circle	Formula for Area a Circle $L = \pi \times r^2$ Formula for Perimeter a Circle $K = 2 \times \pi \times r$
3	 Triangel	Formula for Area a Triangel $L = \frac{1}{2} \times\times a \times t$ Formula for Perimeter a Triangel $K =$ jumlah ketiga sisi
4	 Semicircle	Formula for Area a Semicircle $L = \frac{1}{4} \pi \times r^2$ Formula for Perimeter a Semicircle $K = \pi \times r$

Figure 3. Side View

The length of the building from the front and back is about 75.30 m and its height is 14.40 m. The side is usually called the left wing and right wing. In this section with a pyramid-shaped roof so that the building is like a very large and wide room. The building is supported by 80 octagonal stone pillars and 43 wooden pillars with arches in the shape of an inverted boat keel and horseshoes. At the top there is a crescent moon decoration at the top. The appearance of the side, various flat geometric shapes are visible:

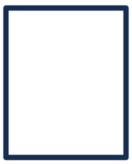
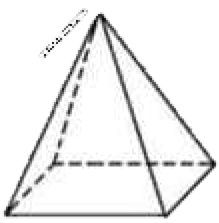
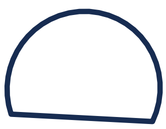
No	Geometric Shapes	Formula
1	 Rectangle	Formula for Area a rectangel $L = p \times l$ Formula for Perimeter a $K = 2p + 2l$
2	 Square pyramid	Formula for Area a square phyramid $L = base\ area + vertical\ side\ area$ Formula for Perimeter a $K = 4 \times s + L$ Formula for volume a square pyramid $V = \frac{1}{3} \times La \times T$
3	 Semicircle	Formula for Area a semicircle $L = \frac{1}{4} \pi \times r^2$ Formula for Perimeter a semicirle $K = \pi \times r$

Figure 4 : Roof Section

On the roof or ceiling of the palace in the form of bamboo shoots, this section contains characteristics of cubism patterns where the pattern is a mixture of Indian Moghul style architecture. The appearance of the roof or ceiling, various flat geometric shapes are visible:

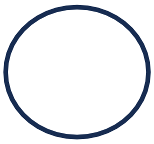
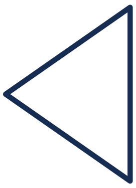
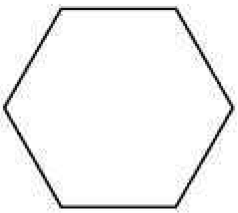
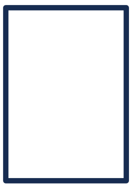
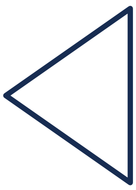
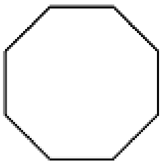
No	Geometric Shapes	Formula
1	 Square	Formula for Area a square $L = s \times s$ Formula for Perimeter a square $K = 4 \times s$
2	 circle	Formula for Area a cirle $L = \pi \times r^2$ Formula for perimeter a circle $K = 2 \times \pi \times r$
3	 Triangle	Formula for Area a triangle $L = \frac{1}{2} \times\times a \times t$ Formula for Perimeter a triangle $K =$ jumlah ketiga sisi
4	 *hexagon*	Formula for Area a hexagon $L = 6 \times s$ Formula for Perimeter a hexagon $K = 6 \times s$

Figure 5. Floor

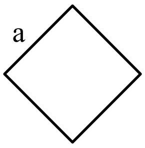
The appearance of the floor section, various flat geometric shapes are visible:

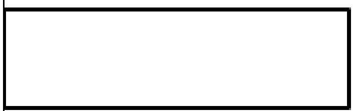
No	Geometric Shapes	Formula
1	 Square	Formula for Area a square $L = s \times s$ Formula for Perimeter a square $K = 4 \times s$
2	 Rectangle	Formula for Area a rectangle $L = p \times l$ Formula for Perimeter a rectangle $K = 2p + 2l$
3	 Triangle	Formula for Area a triangle $L = \frac{1}{2} \times \times a \times t$ Formula for perimeter a triangle $K = \mathrm{a} + \mathrm{b} + \mathrm{c}$

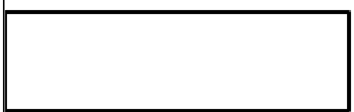
4	 Octagon	Formula for Area a octagon $L = 2 \times s^2 \times (1 + \sqrt{2})$ Formula for Perimeter a octagon $K = 8 \times s$

Muzium Adat Istiadat (Istana Jahar)

This Museum is known as Istana Jahar because of the traditional Malay architectural design of Kelantan. This museum was originally the Palace of Raja Bendahara Long Kundur Bin Sultan Ahmad, it was built in 1887. This palace was also the resting place of several ruling sultans including the late Sultan Ismail Ibni Sultan Muhammad IV (1920 – 1944). This Museum was established in 1992 and the inauguration ceremony was completed by the Al-Sultan of Kelantan Tuanku Ismail Petra Ibni Almarhum SultanYahya Petra on 27 July 1992. This building is a building that is the property of the Kelantan State Museum Corporation and has been gazetted as a historic building State of Kelantan in 2005 under Act 645.

Geometric Shapes	**Formula**
a  Rhombus	Area of rhombus = base × height Perimeter $P = 4a$

No	Geometric Shapes	Formula
1	 Rectangle	Area *A=wl* Perimeter *P=2(w+l)*

No	Geometric Shapes	Formula
1	 Rectangle	Area *A=wl* Perimeter *P=2(w+l)*

4. CONCLUSION

This study concludes that an ethnomathematical perspective offers a rigorous pathway for contextualizing school mathematics through Malay cultural heritage. Drawing on qualitative ethnographic analysis, the authors identify recurring geometric structures embedded in the architectural artefacts of Maimoon Palace and Istana Jahar, including rectangles, triangles, circles, semicircles, hexagons, octagons, and rhombuses, which can be mapped to curricular topics such as perimeter, area, and volume. The findings suggest that culturally responsive integration of these artefacts can enhance students' conceptual understanding, engagement, and cultural identity while supporting heritage preservation in the face of globalization. The article further underscores the need for more operational instructional models and teacher guidance to ensure systematic classroom implementation and evaluable learning outcomes

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REFERENCES

1. Dinata, K. B., & Junaidi, J. (2022). Etnomatematika: Sebuah Eksplorasi Matematika dalam Budaya Lampung Pepadun. *Edukatif*, *4*(3), 4161–4169. https://doi.org/10.31004/edukatif.v4i3.2733
2. Mollah, A. T., & Kanu, A. R. (2024). Folk Mathematics in Everyday Life. *International Journal for Multidimensional Research Perspective (IJMRP)*, *2*(9), 19–26. https://doi.org/10.61877/ijmrp.v2i9.187
3. Jacob, G. (2021). Ethnomathematics. *International Journal of Advanced Research*. https://doi.org/10.21474/ijar01/13409
4. Alvianto, A. L., & Setianingsih, R. (2024). Eksplorasi Etnomatematika Pada Peninggalan Sejarah Dan Budaya Sumenep. *MATHEdunesa*, *13*(1), 234–254. https://doi.org/10.26740/mathedunesa.v13n1.p234-254
5. WANG, G., & WANG, Y. (n.d.). *Cultural Characteristics of Mathematics*. https://doi.org/10.3969/j.issn.1674-117x.2006.02.021
6. Setyawati, H., Vitri, S. A. E., Fakhriyana, D., & Maylani, F. (2023). Systematic Literature Review: Ethnomathematics of Traditional Batik Motifs on Students' Mathematical ConceptsUnderstanding Ability. *Logaritma*, *11*(02), 195–216. https://doi.org/10.24952/logaritma.v11i02.10085
7. Susanti, R., Gunansyah, G., & Nasution, N. (2025). Integrating Local Culture into Mathematics Learning: Ethnomathematics Approach Using Udeng Pacul Gowang in Elementary Schools. *Journal of Innovation and Research in Primary Education*, *4*(3), 947–957. https://doi.org/10.56916/jirpe.v4i3.1472
8. Ibrahim, R. A., & Wahid, A. J. (2024). Building an Understanding of Mathematics through Ethnic Mathematics: A Case study of Learning in Bintuni Bay Regency. *International Journal of Ethno-Sciences and Education Research*. https://doi.org/10.46336/ijeer.v4i4.782
9. Y, S. L. O. (2024). Coastal Ethnomathematics in Geometry Learning: A Study at Senior High Schools in Panimbang Regency. *International Journal of Ethno-Sciences and Education Research*. https://doi.org/10.46336/ijeer.v4i4.783

10. Ibrahim, M., & Perwira Negara, H. R. (2025). Ethnomathematics in Improving Students' Concept Understanding: A Meta-Analysis. *Ulul Albab*, *29*(1), 57. https://doi.org/10.31764/jua.v29i1.30334
11. Hidayat, A. (2023). *Teaching mathematics through a cultural lens: Allowing students to resonate the academic content*. https://doi.org/10.30738/union.v11i3.15840
12. Sholihah, D. A., Abdulla, A., Mubarok, M. N., Richardo, R., & Nawangsasi, E. (2025). Workshop Pembejaran Matematika Realistic Mathematics Education dengan konteks budaya untuk Guru di MTs Nurul Ummah Kotagede Yogyakarta. *Bumi*, *3*(3), 124–130. https://doi.org/10.61132/bumi.v3i3.998
13. Cesaria, A., Adnan, M., Kemal, E., Rismen, S., Ramadoni, R., & Delyana, H. (2025). Exploring concepts of ethno-mathematics to introduce the local culture and its values for higher education students. *Al-Jabar: Jurnal Pendidikan Matematika*, *16*(1). https://doi.org/10.24042/ajpm.v16i1.26490
14. Arion, K. (2024). Exploring local wisdom: utilizing ethnomathematics to improve mathematical creative thinking skills. *Jurnal Theorems (The Original Research of Mathematics)*, *9*(1), 100–113. https://doi.org/10.31949/th.v9i1.9538
15. Fitriyah, N., Wiryanto, W., Ekawati, R., Mariana, N., & Siswono, T. Y. E. (2025). Ethnomathematics in Sidoarjo Batik Motifs: An Ethnographic Study of Mathematical Concepts in Local Cultural Artifacts. *Journal of Innovation and Research in Primary Education*, *4*(3), 1251–1260. https://doi.org/10.56916/jirpe.v4i3.1531
16. Panggabean, E. M., & Wahyuni, W. (2024). Ethnomathematics Study on the Ornamentation Of The Traditional Malay House Of Selaso Jatuh Kembar. *INTERNATIONAL JOURNAL OF SOCIAL SCIENCE AND EDUCATION RESEARCH STUDIES*, *04*(12). https://doi.org/10.55677/ijssers/v04i12y2024-06
17. Sulaiman, R., & Husain, H. (2019). *Analisis Simetri Reka Bentuk Kesenian Melayu Dalam Perspektif Etnomatematik*. *7*, 72–84. https://doi.org/10.37134/JSML.VOL7.8.2019
18. Krisdiana, I., Masfingatin, T., Murtaifiah, W., Nor Fadhilla, F., & Mabuti, G. DG. (2025). Uncovering mathematical activities and concepts in Batik Pendekar of Madiun City through the lens of ethnomathematics. *Jurnal Elemen*, *11*(3), 630–647. https://doi.org/10.29408/jel.v11i3.29982
19. Oktaviani, C., Herwin, H., Adiwardana, M. R., Fianto, Z. A., & Dahlan, S. C. (2024). Harmonizing Math and Culture: Exploring Ethnomathematics in Malay Culture through Children's Storybooks. *Journal of Innovation in Educational and Cultural Research*, *5*(2), 229–237. https://doi.org/10.46843/jiecr.v5i2.1155