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ETHNOMATHEMATICAL STUDY OF THE WEDDING CULTURE OF THE MUNTAK DAYAK TRIBE

Linda Dwi Saputri* [1], Kasihani Lestari [2], Vera Riyanti [3]
[1,2,3] Sekolah Tinggi Keguruan dan Ilmu Pendidikan Melawi

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ABSTRACT

This study aims to explore the ethnomathematical elements embedded in the wedding rituals of the Dayak Muntak community in Balai Agas Village, Belimbing District, Melawi Regency, West Kalimantan. Mathematics is often perceived as an abstract subject, detached from students' real-life experiences. Ethnomathematics, however, emphasizes that mathematical concepts are closely related to cultural practices, and therefore can serve as meaningful contexts for learning. The research employed a qualitative approach with an ethnographic method. The subjects consisted of customary leaders and community members directly involved in wedding rituals, while the object of the study was the sequence of traditional wedding ceremonies. Data were collected through in-depth interviews, participant observation, and documentation, and analyzed using Miles and Huberman's interactive model, which includes data reduction, data display, and conclusion drawing. The findings indicate that the Dayak Muntak wedding procession contains various ethnomathematical elements, particularly numerical systems and logical reasoning. Numerical concepts are evident in the *Mantoh Adat* and *Beduda* rituals, where customary obligations are calculated in standardized units called Real (equivalent to Rp. 50,000). Logical reasoning is reflected in several practices: conditional statements in *Beduda* (implication), prohibitions in *Amur Boras Buang Taba* (conjunction), and alternative forms of customary payments (disjunction). These practices demonstrate that mathematical reasoning has long been embedded in cultural life and continues to be preserved through rituals.

Corresponding Author:

Linda Dwi Saputri,
Mathematics Education Study Program,
Sekolah Tinggi Keguruan dan Ilmu Pendidikan Melawi,
Indonesia Email: dwisaputrilinda@gmail.com
Phone Number: 085350615430

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1. INTRODUCTION

Mathematics plays a fundamental role in human life, functioning not only as a tool for calculation but also as a means of fostering logical, systematic, and rational thinking. Despite its importance, mathematics is frequently perceived by students as an abstract and difficult subject, detached from real-life experiences. This perception contributes to the notion that mathematics is merely a set of formulas and procedures to be memorized, rather than a meaningful discipline connected to everyday practices. Such a view tends to limit students' engagement and motivation in learning mathematics. In order to address this problem, researchers and educators have highlighted the importance of contextualizing mathematics within cultural practices that are close to students' daily lives.

The relationship between mathematics and culture has been widely acknowledged in mathematics education research. (A. Bishop, 1994)emphasizes that mathematics is a cultural phenomenon because cultural values and practices shape how mathematical knowledge is developed, understood, and applied. Similarly, the National Council of Teachers of Mathematics (NCTM, 2000) asserts that connecting mathematics with students' cultural backgrounds can improve both learning outcomes and appreciation of the subject. Culture not only reflects ways of living but also embodies systems of reasoning that are highly relevant for mathematics education. Thus, integrating culture into mathematics teaching provides an alternative strategy to overcome the perception of mathematics as an abstract subject.

This cultural integration in mathematics education is recognized under the concept of ethnomathematics. Coined by (D'ambrosio, 1989), ethnomathematics refers to the study of mathematical ideas and practices as they are embedded in cultural contexts. According to (Rosa & Orey, 2016), ethnomathematics explores how mathematical concepts evolve and are applied within the traditions, artifacts, and daily activities of specific cultural groups. Through ethnomathematics, learners are given opportunities not only to understand mathematical concepts but also to appreciate and preserve their cultural heritage (Efryanty et al., 2023; Malalina et al., 2020; Saidati et al., 2022). In the Indonesian context, the diversity of ethnic groups and local traditions provides a rich source for ethnomathematical studies (Astriandini & Kristanto, 2021; Orey & Rosa, 2006). This diversity can serve as a medium for character development, critical thinking, and strengthening students' identities while learning mathematics (Eka et al., 2021).

Research on ethnomathematics in Indonesia has been conducted in various cultural domains, such as traditional games, weaving patterns, local architecture, and customary ceremonies. These studies demonstrate that cultural practices often embody mathematical concepts, including geometry, measurement, probability, and algebraic reasoning. However, most ethnomathematics research tends to focus on artifacts (e.g., batik patterns, woven fabrics, and traditional houses), while relatively few studies explore social rituals and ceremonies, especially marriage traditions. As a result, there remains a gap in understanding how mathematical ideas are reflected in dynamic cultural practices such as wedding ceremonies, which involve sequences, measurements, spatial arrangements, and symbolic representations.

Marriage is a cultural institution that exists universally but manifests differently across societies. In many communities, weddings are not merely personal unions but also social events that reflect collective values, traditions, and systems of knowledge. In Indonesia, wedding customs are highly diverse, varying across ethnic groups, religions, and social classes (Tenis, 2021). Each wedding ritual typically contains implicit forms of

knowledge, including mathematical aspects, that are yet to be systematically studied. This makes marriage ceremonies a relevant and underexplored context for ethnomathematical research.

One example of a unique cultural practice is the wedding tradition of the Dayak Muntak tribe. The Dayak Muntak community is a sub-ethnic group of the Dayak people residing in Balai Agas Village, Belimbing District, Melawi Regency, West Kalimantan. Their wedding ceremonies are conducted through a series of structured rituals, beginning with agreements between families, followed by customary discussions (*mantoh adat*), symbolic acts such as door-closing and bargaining (*beduda*), processions, religious marriage contracts, and communal celebrations. Each stage of the ceremony embodies cultural rules, symbolic values, and systematic processes that reflect a way of thinking comparable to mathematical reasoning. For instance, sequencing in rituals, the distribution of roles and resources, the negotiation of symbolic payments, and the spatial arrangements of participants all provide opportunities to identify mathematical elements. Although the Dayak Muntak wedding culture is rich with symbolic meaning and procedural structures, its potential as a context for ethnomathematical analysis has not been fully explored in existing research. Most available literature on Dayak culture focuses on anthropology, sociology, or cultural preservation, with limited emphasis on mathematical perspectives. Therefore, a study that systematically analyzes the mathematical concepts embedded in the Dayak Muntak wedding ceremony is necessary. Such a study not only contributes to the growing body of ethnomathematics research but also offers practical implications for integrating local culture into mathematics education. Based on this background, the present study seeks to examine the ethnomathematical aspects of the Dayak Muntak wedding culture. Specifically, this research aims to identify and analyze the mathematical concepts reflected in the rituals and practices of the wedding ceremony. By doing so, the study is expected to enrich the discourse on ethnomathematics in Indonesia, provide new insights into the cultural foundations of mathematical thinking, and support efforts to contextualize mathematics education through local cultural wisdom.

2. METHOD

This study employed a qualitative research design with an ethnographic approach. The ethnographic method was chosen because the research aimed to explore and interpret cultural values, symbols, and practices embedded in the wedding rituals of the Dayak Muntak community. Ethnography allows the researcher to examine cultural activities from the perspective of community members and to identify implicit mathematical concepts within the observed practices. Through direct engagement with cultural actors and documentation of social rituals, this approach provides an in-depth understanding of how mathematics is manifested in the lived experiences of the Dayak Muntak people.

Research Location

The study was conducted in Balai Agas Village, Belimbing District, Melawi Regency, West Kalimantan. This village was selected because it is the center of the Dayak Muntak community, which still maintains its traditional wedding ceremonies. The setting provides authentic cultural practices that serve as the object of ethnomathematical investigation.

Research Subjects and Objects

The subjects of this research consisted of several key informants, including the *Temenggung* (customary leader), elders, community members, and couples or families directly involved in the wedding rituals. These informants were selected purposively based on their knowledge, role, and participation in the ceremonies. Meanwhile, the object of this study was the series of rituals performed during the Dayak Muntak wedding ceremony, which reflect cultural practices potentially linked to mathematical ideas such as sequencing, measurement, classification, and symbolic representation.

Research Procedure

The research procedure followed several systematic steps:

1. Preparation Stage
   The researcher conducted a preliminary study by reviewing literature on ethnomathematics and previous studies on Dayak culture. This stage also included designing the research proposal, identifying potential informants, and establishing communication with local leaders to gain permission and build trust with the community.
2. Data Collection Stage
   Data were collected primarily through three techniques:
   - Participant Observation: The researcher observed and participated in the wedding rituals of the Dayak Muntak community. Field notes were taken to record sequences of events, cultural symbols, and social interactions.
   - In-depth Interviews: Semi-structured interviews were conducted with the customary leader, elders, and community members to gather narratives about the meaning, values, and procedures of the wedding rituals.
   - Documentation: Photographs, audio recordings, and written documents related to the rituals were collected to complement observations and interviews.
3. Data Recording and Organization
   All information obtained during observation and interviews was documented in field notes and transcripts. These materials were organized systematically according to the stages of the wedding ceremony to facilitate subsequent analysis.
4. Data Analysis Stage
   The data analysis technique referred to the interactive model developed by (Miles & Huberman, 1994), which includes three main components:
   - Data Reduction: Selecting, simplifying, and focusing data relevant to the research objectives, particularly those indicating mathematical elements.
   - Data Display: Presenting organized data in the form of narrative descriptions, tables, or diagrams that illustrate the cultural practices and their relation to mathematical concepts.
   - Conclusion Drawing/Verification: Interpreting patterns and meanings from the data, formulating findings regarding the mathematical concepts inherent in the wedding rituals, and verifying them through continuous comparison with field evidence.
5. Conclusion Stage

At this stage, the researcher synthesized the findings to answer the research questions and formulated conclusions about the ethnomathematical aspects of the Dayak Muntak wedding culture.

Research Instruments

In qualitative ethnographic research, the primary instrument is the researcher. To support data collection, the researcher employed several tools, including semi-structured interview guides, field note templates, and audio-visual recording devices. The interview guide was designed to explore information about ritual sequences, cultural meanings, and perceptions of mathematical aspects within the wedding traditions. Field notes served to capture nonverbal interactions and contextual details not easily recorded through other instruments.

Data Validity

To ensure the credibility and trustworthiness of the data, several validation strategies were employed:

- Triangulation of Sources: Data from different informants (customary leader, elders, community members) were compared to obtain consistent information.
- Triangulation of Techniques: Observational data were cross-checked with interview results and supporting documentation.
- Member Checking: Preliminary findings and interpretations were discussed with key informants to confirm accuracy and avoid misrepresentation.
- Prolonged Engagement: The researcher spent sufficient time in the field to develop trust and obtain comprehensive data about the cultural context.

Ethical Considerations

The study respected ethical principles in conducting research with indigenous communities. Prior informed consent was obtained from all participants, and their identities were kept confidential to protect privacy. The researcher also adhered to local cultural norms and customs during data collection to maintain respectful engagement with the community.

3. RESULTS AND DISCUSSION

3.1. Results

Researchers have compiled libraries and data results from existing research in the process of studying the ethnic group Dayak Muntak in Balai Agas Village, District Belimbing, Melawi Regency, West Kalimantan. The marriage procession in the Dayak Vomit tribe began with an agreement between the two parties regarding the location of the ceremony. If a wedding is held with couples who come from different villages or ethnic groups, then the bride arriving from outside the village is welcomed through a procession, “ *notak ompung* ". In the procession, the *notak ompung* representative from the party, the second bride, *performs "beduda* ” as a prerequisite, as a prerequisite for carrying out *ompung* cutting.

Figure 1. Procession *Notak Ompung*

After the procession, note that the *notak ompung* guests who come to the House party enjoy the food that has been served. On the night, the day was marked by the implementation of the *mantoh adat*, which includes talks about obligation customs, a must-have wedding party, and the payment process (calculation) custom. The Temenggung custom guided the event. Temenggung Customs is a leading customs authority responsible for addressing all customs-related issues and overseeing the implementation of customs laws and regulations.

Figure 2. Procession *Mantoh Adat*

When *Mantoh Adat* provided a plate and filled it with rice, inside rice-stuffed bamboo, several customs are paid, and every one of these customs paid, so one bamboo is revoked. The parties' man must pay all customs that have been determined. However, if customs have not been paid, these are recorded by the Temenggung. Customs that the parties have not resolved are viewed as a form of obligation or fixed debt that must be fulfilled, even though no deadline is set for settlement; instead, they are customized through an agreement between the two parties. Customs paid No may fit above more; if what is paid is right, then it must be returned by the woman (no determined amount), because if paid off, it becomes taboo.

Figure 3. Procession of Bamboo Sticking into Rice

The party man pays customs in accordance with the customs provisions of the Muntak Dayak tribe. System payment customs use Real units. In calculations, customs use these real equivalent units with the Indonesian currency, Rp. 50,000.00. Customary data from the Dayak Muntak ethnic group wedding ceremony are served in Table 1.

Table 1. Data on the Marriage Customs of the Muntak Dayak Tribe

No	TYPES OF CUSTOMS	REAL/TAIL/SEED/METER	REAL PRICE	AMOUNT	INFORMATION
1	Vote Opening Money	2 Real	Rp. 50,000	Rp. 100,000	
2	Ricik Penopau Chicken	1 Tail			One chicken
3	Ricik Penantai Plate	1 White Plate			1 Glass Plate
4	Ricik Sapit Cloth	1 Piece of Batik Cloth			
5	Ricik Mite Cloth	1 Piece of Batik Cloth			
6	Seniba Cloth	1 Piece of Batik Cloth			
7	Father's Delivery	10 Real	Rp. 50,000	Rp. 500,000	
8	Mom's Delivery	10 Real	Rp. 50,000	Rp. 500,000	
9	Areca Nut Flower	10 Real	Rp. 50,000	Rp. 500,000	
10	Gray Mites	4 Meters of White Cloth			
11	Penyowak Ring	1 Gram of Gold			1 Ring
12	Gold Palit Cheeks	1 Gram of Gold			1 Pair of Earrings
13	Body Shaper	1 Ingka Jar Seed		Rp. 2,500,000	If cashed
14	Pekain Stem	10 Grams Gold/100 Real	Rp. 50,000	Rp. 5,000,000	If cashed
15	Ant's Cage	1 Set of Sleeping Tools			Mattresses, Pillows, etc.
16	Padung Wall Cloth	20 Real	Rp. 50,000	Rp. 1,000,000	
17	Lunju Door Whistle	2 Real	Rp. 50,000	Rp. 100,000	
18	Village Administration & Traditional Marriage Certificate	6 Real per Party	Rp. 50,000	Rp. 300,000	
19	Church Wedding Certificate	1 FC per Party		Rp. 500,000	
20	Committee Money	8 Real per Party	Rp. 50,000	Rp. 400,000	
21	Marriage Blessing Money	3 Real per Party	Rp. 50,000	Rp. 150,000	Two Parties
22	Marriage Witness Fee	2 Real per Party	Rp. 50,000	Rp. 100,000	

23	Errand Boy Money	2 Real	Rp. 50,000	Rp. 100,000	Man
24	Door Opener	2 Real	Rp. 50,000	Rp. 100,000	
25	Amur Maternity	1 Real	Rp. 50,000	Rp. 50,000	
26	Inheritance Custom	2 dozen bowls			
27	Security Deposit	4 Real	Rp. 50,000	Rp. 200,000	Two Parties
28	The Tradition of Throwing Rice and Discarding Taba	2 Real	Rp. 50,000	Rp. 100,000	Two Parties
29	Wedding Costs			Rp. 20,000,000	Divided by two
30	Penotas Tali Rambai Tradition	4 Real	Rp. 50,000	Rp. 200,000	
31	Kelongkau Customs	4 Real	Rp. 50,000	Rp. 200,000	
32	The Custom of Cultivating a Single Pinang Nut	4 Real	Rp. 50,000	Rp. 200,000	

Notes: Points customs numbers 30, 31, and 32 are subject to change customs if found between the child's youngest, only child, his sister's daughter, or a woman formerly married to her older sister.

Table 1 on the wedding customs of the Muntak Dayak Tribe reveals that several types of customs incorporate mathematical concepts related to measurement, currency value, and unit conversion. For example, in the Tungkau Uban custom (No. 10), which uses a 4-meter white cloth, the application of the concept of measuring length is apparent. Furthermore, customs that are manifested in the form of money, such as the Opening Money (No. 1), Father's Birth (No. 7), Mother's Birth (No. 8), and Security Money (No. 27), reveal a connection to the value of currency. Meanwhile, customs that use gold, such as the Penyowak Ring (No. 11), Palit Pipi Gold (No. 12), and Batang Pekain (No. 14), demonstrate unit conversion between grams of gold and real, illustrating the application of the concept of unit conversion and value equivalence.

If the party Woman moves, follow the party men, then the charge customs subtractors are presented in Table 2.

Table 2. Customs of the Head

No	TYPES OF CUSTOMS	REAL/TAIL/SEED/METER	REAL PRICE	AMOUNT
1	Customs of the Lawang Village	40 Real	Rp. 50,000.00	Rp. 100,000.00
2	Tajau Changes to Sitting	One Pot of Potted Beans/ 200 Real	Rp. 50,000.00	Rp. 10,000,000.00
3	Laughter Replaces Ingan	1 Tawak/Gong Keliling Seed 7/140 Real	Rp. 50,000.00	Rp. 7,000,000.00
4	Bone Replacement Rifle	1 Rifle Shoot		Rp. 1,500,000.00
5	Kantan rice paddy	800 Bushels of Rice/160 Real	Rp. 50,000.00	Rp. 8,000,000.00

Table 2 explains that items such as Padi Penukun Kantan (Penunak Custom, No. 5), which mentions 800 gantang padi, also display the concept of traditional volume units that can be analyzed in the context of ethnomathematics, especially in relation to the local measurement system. Thus, the customary wedding practices of the Muntak Tribe not only represent cultural values but also implicitly reflect the application of mathematical

concepts closely related to measurement, exchange rates, and unit conversion systems in the daily lives of the community.

After the procession*, the Mantoh adat* were completed, and the wedding ceremony was held the next day. Before the procession begins, the party man assigns an envoy to carry out *beduda*, namely the ritual of opening the door to pick up the bride. *Beduda* is a form of dialogue or traditional rhyme competition that conveys meaning, emphasizes the readiness of second-generation parties, and serves as a symbol of ratification, beginning with the connection formed through marriage within a family. This ritual is done seven times, and then on the seventh count, the bride's man opens the door so that the bride is permitted to go out to parade around the village. After the procession, the wedding is, in a way, officially blessed by the priest or pastor, and then followed by a reception.

Figure 4. Procession of the procession

At the reception event series, on the evening of the day, the ritual *of Amur Boras buang taba is performed, accompanied by music* and entertainment. Advice from the chief to the entire community present at the party: maintain order by avoiding actions that can cause problems, such as fighting, being alone in a secluded area, and engaging in gambling. If someone did the above, they must be punished according to customs.

Figure 5. Procession *Amur Boras Buang Taba*

3.2. Discussion

The findings of this study highlight that the wedding rituals of the Dayak Muntak community are not merely cultural events, but also constitute a rich repository of mathematical practices. Through participant observation, interviews, and documentation, several ethnomathematical elements were identified, including the use of number systems, unit conversions, sequencing, logical reasoning, and symbolic representation. In this discussion, these findings are analyzed systematically by relating them to formal

mathematical concepts, existing ethnomathematics theories, and implications for mathematics education.

Numerical Systems and Unit Conversion

One of the most salient mathematical features of the Dayak Muntak wedding tradition is the use of *Real* units as a standardized measure of value. A single Real is equivalent to Rp. 50,000.00, and all customary obligations are expressed in multiples of this unit. For instance, the father and mother of the bride are each required to contribute ten Reals, equivalent to Rp. 500,000.00. Similarly, various symbolic items, such as cloths, gold, and livestock, are converted into Reals for uniformity.

This practice demonstrates an implicit understanding of numerical systems and unit conversion. The conversion of goods and symbolic items into Real units reflects the mathematical processes of equivalence and proportionality. Such practices resonate with the ideas of (A. J. Bishop, 1988), who argues that counting and measuring are fundamental mathematical activities inherent in all cultures. By reducing diverse items into a single unit of account, the Dayak Muntak community demonstrates sophisticated reasoning about standardization, equivalence, and arithmetic operations.

From an educational perspective, this finding can be contextualized into the teaching of numbers, place value, and unit conversions in elementary mathematics. Students can learn addition and multiplication through the calculation of total obligations, while also recognizing that mathematical abstraction often emerges from social practices of exchange and obligation.

Sequencing and Iteration

Another prominent mathematical aspect is evident in the *Beduda* ritual, a door-opening ceremony performed seven times before the bride is allowed to be escorted out. This repetition illustrates the concept of iteration and sequencing. The ritual does not succeed until the seventh attempt, emphasizing the symbolic importance of the number seven in the cultural context.

Mathematically, this reflects the use of natural numbers and finite sequences. The explicit requirement for repetition a fixed number of times provides a clear example of how counting structures social rituals. According to (A. J. Bishop, 1991), locating and sequencing are part of the six fundamental mathematical activities embedded in culture. The Beduda ritual exemplifies sequencing as a cultural practice that regulates the flow of events through ordered repetition.

For mathematics education, this finding highlights how cultural rituals can be used to contextualize the teaching of sequences, series, and iteration. Students can be encouraged to model such practices mathematically, linking abstract concepts with meaningful cultural experiences.

Logical Reasoning: Implication, Conjunction, and Disjunction

Logical reasoning is strongly embedded in the Dayak Muntak wedding rituals. Three key examples were observed:

1. Implication in Beduda: The dialogue competition between representatives of the bride and groom includes conditional statements such as: *"If the obligations are fulfilled, then the door will be opened."* This reflects the structure of logical implication ($p \rightarrow q$). The ritual demonstrates that cultural practices often use conditional reasoning, where one event is contingent on another.

2. Conjunction in Amur Boras Buang Taba: During the concluding ritual, the community is advised to refrain from fighting, gambling, wandering alone, and engaging in other disruptive behaviors. These prohibitions can be represented mathematically as a conjunction ($p \wedge q \wedge r \wedge s$). The truth of the overall statement depends on the simultaneous fulfillment of all conditions. If one prohibition is violated, the conjunction becomes false. This illustrates the practical application of logical conjunction in maintaining social order.
3. Disjunction in Customary Payments: In some cases, obligations may be fulfilled in alternative ways, such as paying either 100 Reals or providing 10 grams of gold. This choice exemplifies a logical disjunction ($p \vee q$). The truth value is satisfied as long as one of the conditions is met. However, when multiple obligations must be fulfilled simultaneously, conjunction applies.

These findings reveal that the Dayak Muntak wedding customs are not only cultural mechanisms for regulating social behavior but also practical applications of formal logic. As (Gardenia & Rahmawati, 2022) note, mathematical logic is essentially rigorous reasoning used to determine the validity of statements. The rituals demonstrate that logical structures—implication, conjunction, disjunction—are naturally embedded in cultural activities.

Integration with Ethnomathematics Theory

The observations align with (D'Ambrosio, 1985) notion of ethnomathematics as the study of mathematical ideas embedded in cultural practices. The Dayak Muntak traditions illustrate how mathematical reasoning is not confined to classrooms but emerges in rituals, negotiations, and symbolic exchanges. Furthermore, the findings support (A. J. Bishop, 1988) framework of six fundamental mathematical activities—counting, measuring, locating, designing, playing, and explaining—all of which can be observed in the wedding rituals.

By demonstrating that the Dayak Muntak community uses standardized units (counting, measuring), sequences (locating, ordering), and logical reasoning (explaining, justifying), this study contributes to the growing body of literature showing that mathematics is a universal human activity shaped by culture.

Educational Implications

The integration of ethnomathematical findings into mathematics education has several benefits. First, it contextualizes abstract concepts such as numbers, sequences, and logic into real-life cultural practices. This enhances students' motivation and engagement by showing that mathematics is not detached from their lived experiences. Second, it supports cultural preservation by validating indigenous knowledge systems within formal education. Finally, it promotes character development by linking mathematics learning with values such as cooperation, responsibility, and respect for tradition.

For example, teachers can design problem-based tasks that model the use of Reals in customary payments, explore the sequence of Beduda repetitions, or analyze the logical structure of cultural rules. Such tasks not only develop mathematical skills but also encourage students to appreciate their cultural heritage.

Limitations and Future Research

While this study provides valuable insights, it has several limitations. The analysis focused primarily on numerical and logical aspects of the wedding rituals. Other potential mathematical elements, such as spatial arrangements, patterns, and symmetry in decorations or processions, were not examined in detail. Future research could expand the scope to include these dimensions, as well as compare the Dayak Muntak rituals with those of other Dayak subgroups or ethnic communities in Indonesia.

Moreover, the study was conducted with a limited number of informants. Broader participation, including perspectives from younger generations, could provide richer insights into the continuity and transformation of these practices. Another direction for future research is the design and evaluation of educational materials that integrate these findings into classroom practice.

Conclusion of Discussion

The Dayak Muntak wedding rituals embody rich ethnomathematical elements, including numerical systems, unit conversions, sequencing, and logical reasoning. These practices illustrate that mathematics is inherently cultural, reflecting social values and organizational structures. The findings not only contribute to the theoretical development of ethnomathematics but also offer practical pathways for contextualizing mathematics education. By recognizing and incorporating cultural mathematics into teaching, educators can make learning more meaningful, foster cultural awareness, and strengthen students' sense of identity.

4. CONCLUSION

This study concludes that the wedding rituals of the Dayak Muntak community embody rich ethnomathematical elements that are closely related to formal mathematical concepts. The findings reveal that numerical systems, standardized units, sequencing, and logical reasoning are embedded in various stages of the wedding ceremony.

The concept of numbers is particularly evident in the *Mantoh Adat* and *Beduda* rituals, where customary obligations are expressed in standardized units known as Reals. One Real is equivalent to Rp. 50,000.00, and all obligations are calculated based on this unit. This illustrates the community's implicit understanding of counting, measurement, and unit conversion, showing that mathematical abstraction is deeply connected to cultural practices.

Logical reasoning is also found in several rituals. The *Beduda* ceremony reflects logical implication, where the door is opened only if the obligations are fulfilled ($p \rightarrow q$). The *Amur Boras Buang Taba* ritual represents logical conjunction, as all prohibitions must be observed simultaneously ($p \wedge q \wedge r$). In addition, alternative options for customary payments illustrate logical disjunction ($p \vee q$). These practices show that deductive reasoning and logical structures are naturally integrated into cultural traditions.

Theoretically, these findings reinforce (D'Ambrosio, 1985) view that mathematics is culturally situated and support (A. J. Bishop, 1988) argument that counting, measuring, and reasoning are fundamental mathematical activities found in everyday life. The Dayak Muntak case provides evidence that mathematics is not only universal but also contextually expressed in ritual practices.

Practically, the results have implications for mathematics education. By using cultural contexts such as wedding rituals, teachers can design learning activities that connect abstract concepts—numbers, unit conversions, and logic—with real-life

experiences. This approach may enhance student engagement, foster appreciation for local culture, and contribute to character development.

Future research should examine other mathematical elements in Dayak rituals, such as spatial arrangements, geometry, and patterns, and explore how these can be integrated into teaching materials. Expanding the scope of ethnomathematics studies will not only enrich academic discourse but also strengthen efforts to preserve and revitalize local cultural knowledge.

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REFERENCES

Astriandini, M. G., & Kristanto, Y. D. (2021). Kajian Etnomatematika Pola Batik Keraton Surakarta Melalui Analisis Simetri. *Mosharafa: Jurnal Pendidikan Matematika*, *10*(1), 13–24. https://doi.org/10.31980/mosharafa.v10i1.637

Bishop, A. (1994). Cultural Conflicts in Mathematics Education: Developing a Research Agenda. *Learning of Mathematics*, *14*(2), 15–18.

Bishop, A. J. (1988). The Interactions of Mathematics Education with Culture. *Cultural Dynamics*, *1*(2), 145–157. https://doi.org/10.1177/092137408800100202

Bishop, A. J. (1991). *The simbolic Technology Calet Mathematics its Role in Education*. Bullatin De La Societe Mathematique.

D'ambrosio, U. (1989). On ethnomathematics. *Philosophia Mathematica*, *s2-4*(1), 3–14. https://doi.org/10.1093/philmat/s2-4.1.3

D'Ambrosio, U. (1985). Ethnomathematics and Its Place in the History and Pedagogy of Mathematics. *For the Learning of Mathematics*, *5*(February 1985), 44-48 (in 'Classics').

Efryanty, Somakim, & Budi Mulyono. (2023). Etnomatematika Cagar Budaya Rumah Kampung Kapitan Dan Pengintegrasiannya Dalam Pembelajaran Matematika SMP. *Jurnal Derivat: Jurnal Matematika Dan Pendidikan Matematika*, *10*(3), 157–168. https://doi.org/10.31316/jderivat.v10i3.5567

Eka, E., Sugiatno, S., & Munaldus, M. (2021). Kajian Etnomatematika Dalam Tradisi Pernikahan Masyarakat Dayak Kanayatn Di Kecamatan Toho Kabupaten Mempawah. *Jurnal AlphaEuclidEdu*, *2*(2), 167. https://doi.org/10.26418/ja.v2i2.49586

Gardenia, Y., & Rahmawati, C. (2022). Logika Matematika 2023. *Modul*.

Malalina, M., Putri, R. I. I., Zulkardi, Z., & Hartono, Y. (2020). Ethnomatematics: Treasure Search Activity in the Musi River. *Numerical: Jurnal Matematika Dan Pendidikan Matematika*, *4*, 31–40. https://doi.org/10.25217/numerical.v4i1.870

Miles, M. B., & Huberman, A. M. (1994). Qualitative Data Analysis. In *CEUR Workshop*

Proceedings (Vol. 1304, pp. 89–92). SAGE Publications Ltd.

NCTM. (2000). *Principles and Standards for School Mathematics*. The National Council of Teachers of Mathematics, Inc.

Orey, D., & Rosa, M. (2006). Ethnomatematics: Cultural Assertions and Challenges Towarrds Pedagogical Action. *The Journal of Mathematics and Culture*, *1*(March), 57–78.

Rosa, M., & Orey, C. (2016). Innovative Approaches in Ethnomathematics. In *Current and Future Perspectives of Ethnomathematics as a Program*. http://www.springer.com/series/14352

Saidati, S., Risalah, D., Sandie, S., Bahri, S., & Lestari, E. T. (2022). Study Etnomatematika Betangker pada Acara Pernikahan di Desa Nanga Mahap. *Jurnal Basicedu*, *6*(5), 7865–7871. https://doi.org/10.31004/basicedu.v6i5.3639

Tenis, E. R. (2021). Kajian Etnomatematika Pada Proses Pernikahan Masyarakat Amarasi Barat Baun. *Asimtot : Jurnal Kependidikan Matematika*, *3*(1), 35–43.