Media Pendidikan Matematika
Program Studi Pendidikan Matematika FSTT UNDIKMA
https://e-journal.undikma.ac.id/index.php/jmpm

Desember 2025 Vol. 13 No. 2
P-ISSN: 2338-3836
E-ISSN: 2657-0610

Meta-Analysis of Ethnomathematics-Based Geometry Learning in Indonesian Junior High Schools

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Abstract: *This study aims to analyze the effectiveness of the ethnomathematics approach in improving the understanding of geometry among junior high school students in Indonesia. The research method used meta-analysis of six quasi-experimental articles published between 2021 and 2025 that met the following criteria: (1) used a pretest–posttest design with a control group, (2) involved junior high school students as subjects, and (3) reported quantitative data in the form of means, standard deviations, and sample sizes. The effect size was calculated using the Standardized Mean Difference (Cohen's d) and combined with a random effects model. The synthesis results showed a combined effect size of d = 0.999 (p = 0.014), which is classified as a large effect according to Cohen. The heterogeneity test resulted in Q = 48.739 (df = 5; p = 0.014) and I² = 89.74%, indicating significant variation between studies. The funnel plot analysis and Egger's test (p = 0.556) showed no significant publication bias. These results prove that the integration of cultural artifacts such as batik motifs, traditional houses, and traditional games in geometry learning is effective in improving junior high school students' mathematical understanding. This study emphasizes the importance of applying ethnomathematics as a contextual learning strategy in line with the principles of the Merdeka Curriculum.*
Keywords*:* *ethnomathematics, meta-analysis, geometry, mathematical understanding*

Abstrak: Penelitian ini bertujuan untuk menganalisis efektivitas pendekatan etnomatematika dalam meningkatkan pemahaman geometri di kalangan siswa SMP di Indonesia. Metode penelitian yang digunakan adalah meta-analisis terhadap enam artikel quasi-eksperimental yang diterbitkan antara tahun 2021 dan 2025, yang memenuhi kriteria berikut: (1) menggunakan desain pretest-posttest dengan kelompok kontrol, (2) melibatkan siswa SMP sebagai subjek, dan (3) melaporkan data kuantitatif berupa rata-rata, deviasi standar, dan ukuran sampel. Ukuran efek dihitung menggunakan Standardized Mean Difference (Cohen's d) dan dikombinasikan dengan model efek acak. Hasil sintesis menunjukkan ukuran efek gabungan sebesar d = 0,999 (p = 0,014), yang diklasifikasikan sebagai efek besar menurut Cohen. Uji heterogenitas menghasilkan Q = 48,739 (df = 5; p = 0,014) dan I² = 89,74%, yang menunjukkan variasi signifikan antar studi. Analisis funnel plot dan uji Egger (p = 0,556) menunjukkan tidak adanya bias publikasi yang signifikan. Hasil ini membuktikan bahwa integrasi artefak budaya seperti motif batik, rumah adat, dan permainan tradisional dalam pembelajaran geometri efektif dalam meningkatkan pemahaman matematika siswa SMP. Penelitian ini menekankan pentingnya penerapan etnomatematika sebagai strategi pembelajaran kontekstual yang sejalan dengan prinsip-prinsip Kurikulum Merdeka.
Kata kunci: etnomatematika, meta-analisis, geometri, pemahaman matematika

INTRODUCTION

Mathematics is a fundamental science that plays an important role in developing logical, critical, creative, and systematic thinking skills. However, in Indonesia, students' mathematical abilities remain one of the main issues in education. The results of international assessments such as the Programme for International Student Assessment (PISA) in 2022 show that the average mathematics scores of Indonesian students are still below the OECD average (OECD, 2023). Similarly, the TIMSS 2015 report indicates a low proportion of students achieving higher cognitive levels in geometry and algebra (Mullis et al., 2016). These findings suggest that mathematics instruction-often dominated by procedural learning-has not yet provided students with a strong conceptual foundation.

One of the reasons for low student achievement is the learning approach that is still predominantly mechanistic and formula-oriented. Students often view mathematics as an abstract science that is far removed from everyday life. In fact, in the context of Indonesia's multicultural society, local cultural values can be a rich and relevant source of learning to bridge mathematical concepts with real-life experiences. In this case, ethnomathematics emerges as a potential approach to link formal mathematical knowledge and local wisdom that already exists in the culture of society. Ethnomathematics offers a pedagogical alternative that connects mathematical concepts with local cultural activities. Cultural artifacts such as batik motifs, traditional houses, wood carvings, and regional games embody mathematical structures that can be used as authentic representations (Rosa & Orey, 2011).

In the last two decades, the application of ethnomathematics in Indonesian schools has shown significant development. Several recent studies report that ethnomathematics-based learning can increase learning motivation, student engagement, and mathematics learning outcomes (Hartoyo et al., 2025; Permana, 2023). However, the results of these studies are not consistent: some show a very large effect, while others report moderate or even insignificant improvements. These differences may be due to variations in research design, cultural context, mathematical material, and the role of teachers in integrating cultural elements into the learning process (Payadnya et al., 2024).

Ethnomathematics is particularly relevant to geometry. Geometry is directly related to shapes, patterns, and spaces that are commonly found in cultural artifacts. For example, symmetrical patterns on batik cloth, prism shapes in traditional Papuan houses, and the concept of comparison in traditional games such as gasing or engklek. Through such contexts, students can understand geometric concepts in a more concrete and meaningful way. Research in this field shows that ethnomathematics can develop spatial visualization skills and deepen understanding of the relationships between shapes (Puspadewi et al., 2025; Zainovi et al., 2025).

In the Indonesian context, cultural diversity-Papua, Java, Minangkabau, Bali, Bugis, and others-provides rich opportunities for designing context-based instructional representations. Within our rich culture and customs, when studying mathematics, we can incorporate knowledge of the history and culture of society (Sandra et al., 2024). From a theoretical standpoint, geometry is particularly compatible with ethnomathematics. Woven and batik patterns reflect symmetry and geometric transformations; Papuan traditional houses demonstrate three-dimensional structures; and local games such as *engklek* embody concepts of spatial arrangement and coordinate geometry. Culture-based representations serve as cognitive scaffolds that help students translate from concrete experiences to abstract mathematical modeling (Rosa & Orey, 2016).

Previous studies have shown that ethnomathematics has the potential to improve mathematical learning outcomes. Rewatus et al. (2020) reported improvements in conceptual understanding through weaving motifs from East Nusa Tenggara, while Fonataba et al. (2023) demonstrated that integrating Papuan traditional houses strengthened students' spatial literacy. However, these findings remain inconsistent; some studies report large effects, whereas others show moderate or even non-significant results. Such inconsistencies may stem from variations in instructional design, teachers' implementation quality, or the characteristics of the cultural artifacts used. Therefore, a quantitative synthesis is needed to provide stronger empirical evidence on the effectiveness of ethnomathematics.

Meta-analysis is a method capable of systematically integrating findings from multiple primary studies and generating more stable effect estimates. Through meta-analysis, disparities in research findings can be analyzed, heterogeneity can be measured, and contextual factors can be identified more objectively.

Based on this rationale, the present study aims to measure the effect of ethnomathematics-based instruction on junior high school students' geometry learning outcomes and analyze heterogeneity across studies to understand variation in implementation.

METHODE

This study uses a quantitative meta-analysis approach to synthesize the results of primary research on the effectiveness of ethnomathematics in geometry learning among junior high school students. This approach was chosen because it is able to systematically integrate findings from several studies, identify heterogeneity of results, and provide stronger conclusions than narrative literature reviews (Putri et al., 2025). The data sources came from quasi-experimental studies that examined the application of ethnomathematics at the junior high school level. Studies were included if they met the following criteria:

1. quasi-experimental pretest–posttest control group design,
2. participants were junior high school students (Grades 7–9), and
3. complete statistical data were available (mean, standard deviation, and sample size).

Articles were searched through Google Scholar, ERIC, DOAJ, and national SINTA-indexed journal repositories using the keywords: *ethnomathematics*, *geometry, junior high school, mathematics learning, cultural-based instruction*. Only peer-reviewed journal articles were considered. Conference proceedings, theses, dissertations, books, and teacher modules were excluded to avoid publication-quality bias. Studies were also excluded if they lacked complete statistics, did not involve ethnomathematics interventions, used single-group designs, or did not focus on geometry-related outcomes.

The search initially produced 612 records. After removal of duplicates (n = 143), 469 articles were screened by title and abstract, resulting in 435 exclusions due to irrelevance or non-experimental designs. Thirty-four full texts were assessed, of which

28 were excluded for incomplete statistics or non-quasi-experimental design. Six studies met all inclusion criteria and were retained for analysis.

The data analysis technique in this study uses a meta-analysis approach, which aims to calculate, combine, and analyze the effect size of the primary studies that have been collected. The entire analysis process refers to the standard procedures described by Retnawati et al (2018) in Introduction to Meta-Analysis. To support accuracy and ease in the statistical analysis process, this study uses JASP (Jeffrey's Amazing Statistics Program) software. The JASP application was chosen because it provides comprehensive meta-analysis features, including effect size calculations, forest plots, heterogeneity tests, and funnel plots to detect publication bias. The stages of data analysis techniques in this study are as follows:

1. Effect Size Calculation
   Effect sizes were calculated using Hedges g, which corrects small-sample bias. The pooled standard deviation was computed as:

$$SD_{pooled} = \sqrt{\frac{(n_E - 1)SD_E^2 + (n_K - 1)SD_K^2}{n_E + n_K - 2}}$$

   Cohen's d was calculated as:

$$d = \frac{\bar{X}_E - \bar{X}_K}{SD_{pooled}}$$

   The Hedges correction was applied:

$$g = d\left(1 - \frac{3}{4(n_E + n_K) - 9}\right)$$

2. Meta-analytic Model
   A random-effects model was predetermined due to expected variability in cultural artifacts, instructional quality, and duration. Unlike fixed-effects models, the random-effects approach assumes the true effect varies between studies and estimates the average distribution of those effects.
3. Heterogeneity Analysis
   Heterogeneity was assessed using Cochran's Q and I^2. The thresholds were interpreted as:
   0–25% (low), 25–50% (moderate), 50–75% (high), and >75% (very high).
4. Publication Bias
   Publication bias was examined using funnel plots and Egger's regression test. A p-value above 0.05 indicated no systematic publication bias. A funnel plot is a visual tool for seeing whether there is an imbalance in the distribution of studies.
   a) If the points are symmetrically distributed in a funnel shape, then there is likely no publication bias.

b) If the points lean to one side, there is likely publication bias.

RESULT AND DISCUSSION

The six articles analyzed came from various regions of Indonesia, with diverse cultural contexts, such as the use of batik motifs, traditional houses, traditional games, and wood carvings as media for learning geometry. All studies used a quasi-experimental design with a control group. The six articles analyzed are shown in the following table 1:

Table 1. Identity of Articles Used in Meta-Analysis

Code	Research Title	Authors	Year	Level	Media used
J1	Etnomatematika Persamaan Garis Lurus dengan Media GeoGebra	Rezkiyana Hikmah & Retno Nengsih	2021	SMP	Etnomatematika GeoGebra & Permainan Egrang
J2	Penerapan Model Pembelajaran Inkuiri Berbasis Etnomatematika	Nur Azmi & Rosdiana	2022	SMP	Etnomatematika Model Inkuiri
J3	Pengaruh Pendekatan Ethno-RME	Mona Lisa Rahmadani, Zulfah, Zulhendri	2023	SMP	Ethno-RME (Realistic Mathematics Education)
J4	Project Based Learning Berbasis Etnomatematika	Ahmad Fauzi, Yusfita Yusuf, Ucu Koswara	2024	SMP	Project Based Learning berbasis Etnomatematika
J5	Efektivitas Pembelajaran Etnomatematika Batik Tangerang	D. ebrianingsih, R.B. Utomo, P.W. Subroto	2024	SMP	Etnomatematika Batik Tangerang
J6	Pengaruh Pembelajaran Etnomatematika Permainan Gobak Sodor	Zeynab Varadita, Aswar Anas, Frida Murtinasari	2025	SMP	Etnomatematika Permainan Gobak Sodor

Each study presents the mean (M), standard deviation (SD), and sample size (n) in the experimental and control groups, enabling the calculation of effect sizes based on *Hedgesg*. The descriptive statistical data are shown in the following table 2:

Table 2. Descriptive Statistical Data

Code	NE	ME	SD E	NK	MK	SD K	Materials	Ethnomathematics Media	Location
J1	50	15.68	15.68	50	16.72	6.038	Geometry	Batik Motifs, Weaving	Makassar
J2	49	0.48	0.23	49	0.27	0.16	Flat	Traditional Houses, Local Weaving	Maros
J3	50	81.68	9,303	50	74.08	12,037	Building Space	Traditional Architecture	Lampung
J4	52	3,818	1,258	52	1,741	1,228	Transformation	Local Geometric Cultural Symbols	Bandung
J5	71	78.86	7.58	71	62.78	12.39	Patterns & Symmetry	Traditional Ornamentation	Jakarta
J6	40	82.75	7.34	40	73.75	8.41	Geometry	Wood Carving, Regional Weaving	Central Maluku

Description

NE	:	N Experiment –Number of participants in the experimental group, namely students who learn using the ethnomathematics approach.
ME	:	Mean Experiment – The average learning outcome score of the experimental group.
SD E	:	Experimental Standard Deviation – Indicates the distribution of student learning outcomes in the experimental group.
NK	:	N Control – Number of participants in the control group, namely students who learn without the ethnomathematics approach.
MK	:	Control Mean – The average learning outcome score of the control group.
SD K	:	Control Standard Deviation – The spread of student learning outcomes in the control group.

Effect Size Value

The effect size of each study was calculated using Hedges *g* with small sample correction. The *g* values ranged from –0.09 to 1.66, indicating substantial variation between studies. Five studies produced positive effect sizes in the moderate to large range ($g > 0.50$), while one study showed a moderate negative effect size. This variation is consistent with the different characteristics of ethnomathematics implementation across cultural contexts and learning designs. The meta-analysis results show:

Table 3. Pooled Effect Size Test Results

Estimate	*Standard Error*	*t*	*df*	*p*
0.999	0.271	3.691	5.000	0.014

$$g_{overall} = 0.999 \quad (p = 0.014)$$

This value indicates that ethnomathematics-based learning provides an increase in geometry achievement of nearly one standard deviation compared to conventional learning. Based on Cohen's criteria, this measure falls into the large effect category. The following forest plot presents the effect size of each study along with the 95% confidence interval and its weighted contribution to the meta-analysis. The size of the square points on the graph indicates the weight of the study, while the horizontal lines represent the confidence interval.

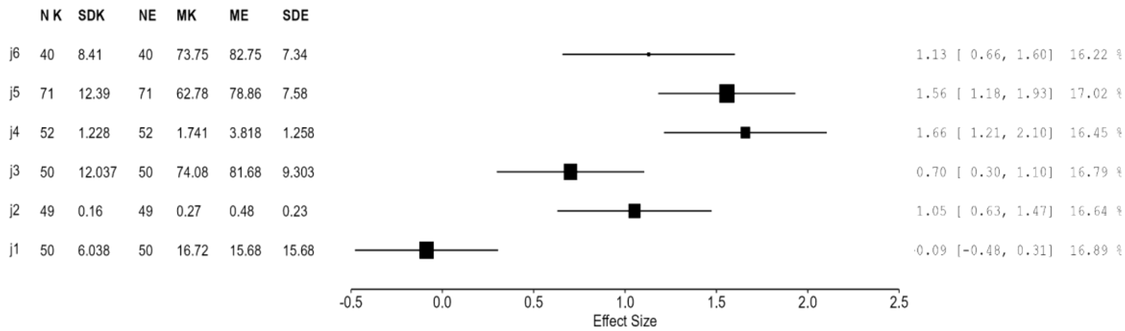

Figure 1. Forest Plot Results

In general, it can be explained that:

a) Study J4 has an effect size of 1.66 with a 95% confidence interval between [1.21; 2.10] and a contribution weight of 16.45%. These results indicate a large and statistically significant effect on students' mathematical understanding.
b) Study J5 has an effect size of 1.56 with a CI of [1.18; 1.93] and a weight of 17.02%, which also indicates a large and significant effect.
c) Study J6 shows an effect size of 1.13 with a CI [0.66; 1.60] and a weight of 16.22%. Although slightly smaller than the previous two studies, this result still shows a significant effect.
d) Study J2 has an effect size of 1.05, with an interval [0.63; 1.47] and a weight of 16.64%. The effect is statistically significant and contributes significantly to the combined analysis.
e) Study J3 had an effect size of 0.70, with a CI [0.30; 1.10] and a weight of 16.79%, indicating a statistically significant moderate effect.
f) The only study that was not statistically significant was J1 with an effect size of -0.09 and CI [-0.48; 0.31], because the confidence interval crossed zero. This indicates that in this study, there was no significant difference between the experimental and control groups.

Inter-Study Heterogeneity

The heterogeneity analysis shows:

$$Q = 48.739 \quad (df = 5; p = 0.014)$$

$$I^2 = 89.74\%$$

The I^2 value is very high, indicating significant variation between studies. This suggests that the effectiveness of ethnomathematics is not constant, but depends on the context of implementation, cultural artifacts, and the design of learning activities.

Publication Bias

The funnel plot examination shows a relatively symmetrical distribution of effects.
The Egger test results are:

$$p = 0.556$$

This value indicates that there is no significant publication bias, so that the research results do not favor only studies that report positive effects. The following forest plot also presents the effect size of each study along with the 95% confidence interval and its weighted contribution to the meta-analysis. The size of the square points on the graph indicates the weight of the study, while the horizontal lines represent the confidence interval.

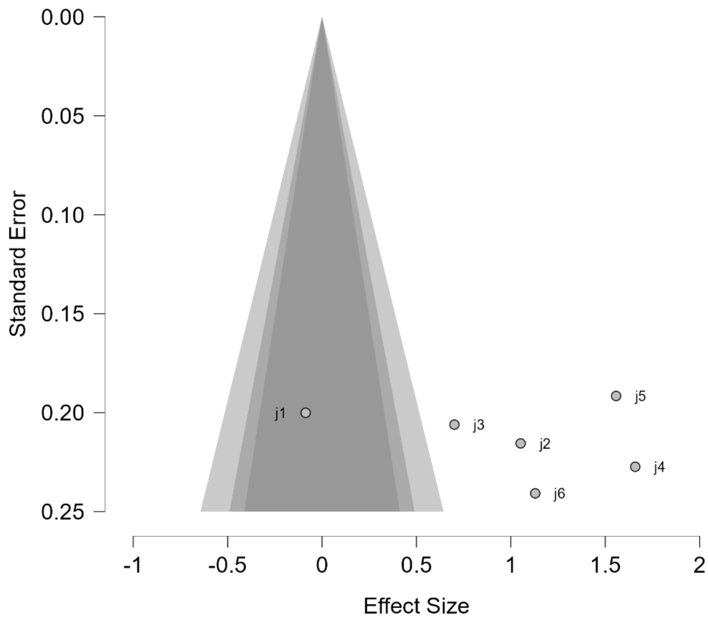

Figure 2. Funnel Plot

The funnel plot above shows the relationship between the standard error (Y- axis) and the effect size (X-axis) of the six journals analyzed. Most of the points (J2, J3, J4, J5, J6) are outside the cone funnel. This indicates that the five studies have small standard errors (large samples) and high precision levels, so they are naturally outside the funnel area based on a certain confidence interval. Study J1 is inside the cone and close to the center line (combined effect size ≈ 0). This indicates that study J1 has a relatively large standard error and results that are close to the overall average of all studies.

Based on the distribution of points in the funnel plot, there is no strong indication of publication bias. Although five of the six studies are outside the cone, their positions are still symmetrically distributed, indicating that the study results are not systematically influenced by selective publication practices. This pattern reflects natural diversity (heterogeneity) in the data rather than distortion due to publication bias.

The meta-analysis findings show that ethnomathematics-based learning has a significant positive impact on junior high school students' geometry achievement (g = 0.999; p = 0.014). These results are consistent with the first research objective, which was to measure the effectiveness of ethnomathematics in geometry learning. Statistically, an effect size close to one standard deviation indicates a substantial rather than marginal improvement in achievement. In the context of mathematics education, this achievement reflects students' success in understanding and applying geometric concepts through meaningful cultural representations. In practice, students tend to find it easier to map shapes, patterns, and spatial transformations when the objects being analyzed are related to their everyday experiences.

Study J1 shows a negative effect because ethnomathematics integration is carried out superficially, where cultural artifacts are only introduced as illustrations without adequate mathematization processes. Culture is not used as a mediating tool to guide students in identifying geometric structures, so that learning activities remain focused on procedures and memorizing formulas. This condition hinders mathematizing, which is the process of students extracting mathematical properties from cultural (Supiyati et al., 2019), while also ignoring the principle of ethnomodeling, which places culture as an object of mathematical analysis (Rosa & Orey, 2016). Thus, the negative results of J1 do not indicate that the intrinsic ethnomathematics approach is ineffective, but rather that its effectiveness is highly dependent on the quality of instructional design that is able to connect cultural artifacts with mathematical representations explicitly and conceptually.

The explanation of why ethnomathematics is effective can be traced through the theory of cultural mediation in mathematics learning. D'Ambrosio (2001) states that mathematics was not born abstractly, but developed from social practices and cultural knowledge. When mathematics classes use authentic cultural artifacts, students not only observe visual forms but also enter into a system of significance that contains values, structures, and patterns. This can be seen in studies with large effect sizes that integrate weaving motifs, traditional house architecture, or traditional games into geometric modeling activities. This modeling process is in line with mathematizing, which is the ability to identify mathematical structures in real-life phenomena (Supiyati, Maher & Lee, 2019). In other words, students are not merely “applying formulas to cultural objects,” but are building mathematical understanding through living cultural experiences.

When mathematics classes use authentic cultural artifacts, students not only observe visual forms but also enter into a system of significance that encompasses cultural values, structures, and patterns. This approach strengthens the meaning of learning because students play an active role in constructing concepts through contextual cultural mediation (Yılmaz, 2020). This can be seen in studies that show a large effect size on learning that integrates weaving motifs, traditional house architecture, or traditional games in geometric modeling activities, which facilitate a deep understanding of mathematical concepts. Thus, students do not simply “apply formulas to cultural objects," but construct mathematical meaning through living cultural experiences—a process that is consistent with the essence of mathematizing in the framework of ethnomathematics.

Theoretical Interpretation: Integration of Culture and Mathematical Understanding

Theoretically, these results support D'Ambrosio's (2001) view that ethnomathematics is a bridge between formal knowledge and local wisdom. Ethnomathematics-based learning allows students to construct mathematical meaning through familiar cultural experiences, making abstract geometric concepts easier to understand. Within Vygotsky's social constructivism framework, cultural context functions as scaffolding that strengthens the process of internalizing mathematical concepts.

Geometry, as a branch of mathematics related to shapes, space, and visual structures, is highly relevant to be contextualized through cultural artifacts. For example, symmetric patterns on batik cloth, prism shapes in traditional houses, or traditional woven structures can be concrete representations of mathematical concepts such as fold symmetry, spatial figures, and geometric patterns. Learning that departs from this context encourages students to discover for themselves the mathematical structures and structures behind the cultural phenomena they encounter in their daily lives.

This finding is also consistent with the results of research by Rosa and Orey (2016), which shows that ethnomathematics broadens students' thinking about mathematics as a cultural product, not just a collection of formulas. Zaslavsky (1991) also explains the mathematical practices of African and Native American communities in relation to numbers and numbering, design and patterns, architecture, and games as children learn without leaving their culture. Thus, ethnomathematics is not only a contextual approach but also an epistemological tool to liberate students' mathematical thinking from the colonial framework, in line with the spirit of the Merdeka Curriculum, which emphasizes independence and meaningful learning.

Heterogeneity and Contextual Factors

The high heterogeneity value ($I^2 = 89.74\%$) indicates significant variation between studies. This is reasonable considering the vast diversity of cultural contexts in Indonesia. Each study used different cultural forms, ranging from Javanese batik, traditional Sumatran houses, to traditional games in Sulawesi, each of which has its own visual and symbolic characteristics. This variation affects the effectiveness of learning, especially if teachers do not have sufficient experience in integrating culture into mathematics learning.

These results emphasize the importance of teachers' pedagogical skills in accurately linking cultural objects to mathematical concepts. Teachers who only present cultural elements as decorations or surface connections without linking them to core geometric concepts tend to produce low improvement. Conversely, teachers who are able to guide students in discovering mathematical relationships in cultural objects produce deeper and more lasting understanding.

Relevance to Previous Research

The results of this meta-analysis reinforce a few previous studies in Indonesia and around the world. Rewatus et al. (2020) found that the ethnomathematics approach significantly increased the motivation and learning participation of junior high school students. Supiyati et al. (2019) also proved that traditional house architecture can be used as an effective medium for understanding the concepts of symmetry and comparison. At the global level, Orey and Rosa (2016) emphasized that ethnomathematics improves conceptual understanding while fostering students' cultural awareness. Sutarto (2021) also stated in his research that the culture of Sukarara weaving, from an ethnomathematics perspective, can explore mathematical concepts such as the concept of geometric transformation that can be used in learning activities and teaching. Thus, the results of this meta-analysis contribute to strengthening empirical evidence that ethnomathematics is not only relevant to primary and secondary education contexts but can also serve as a conceptual framework for the development of culture-based mathematics curricula.

Practical Contribution: Implications for Curriculum and Learning

In practical terms, the results of this study have direct implications for the implementation of the Merdeka Curriculum. This curriculum emphasizes contextual learning, is student-centered, and is rooted in local culture. The ethnomathematics approach provides a concrete foundation for realizing these principles.

First, in terms of learning design, mathematics teachers can use local cultural artifacts as a starting point for introducing geometric concepts. For example, woven motifs can be used to explain symmetry, or traditional house structures can be used to understand spatial shapes. This strategy makes it easier for students to understand concepts because they start from real experiences. Second, in terms of character development, ethnomathematics fosters a sense of pride in one's own cultural identity, while also appreciating the diversity of other cultures. This is in line with the dimensions of the Pancasila Student Profile, especially "global diversity" and "faith and noble character." Third, in terms of education policy, the results of this study can be used as a basis for educational institutions and local education agencies to develop teaching modules and teaching materials based on local culture. The integration of ethnomathematics can strengthen local wisdom as a learning resource while supporting cultural preservation.

Overall, these findings suggest that ethnomathematics is effective not because of its "local" nature, but because of its ability to connect the concrete world with abstract mathematical representations. Culture provides a basis of experience that encourages students to discover, reason, and model meaningful geometric relationships. However, this effect only occurs when teachers operationalize culture as a structure of knowledge, rather than merely as a decoration for learning.

CONCLUSSION AND ADVICE

This study shows that the application of ethnomathematics in geometry learning in junior high schools in Indonesia has a significant effect on improving students' mathematical understanding, with a combined effect size of d = 0.999 (p= 0.014). These results indicate that integrating local cultural elements into mathematics learning can strengthen students' understanding of geometric concepts, which are often abstract. Ethnomathematics provides a real-world context that makes it easier for students to understand geometry through their everyday cultural experiences, such as batik motifs and traditional houses, allowing students to relate mathematical concepts to their lives.

The results of this meta-analysis also show high heterogeneity between studies ($I^2 = 89.74\%$), indicating that the effectiveness of ethnomathematics is greatly influenced by contextual factors, such as cultural type and teacher skills. Therefore, to achieve optimal results, it is important for teachers to understand how to integrate local culture with mathematical concepts in an appropriate manner. Overall, this study supports the application of ethnomathematics as an effective strategy in the mathematics education curriculum in Indonesia, particularly in the context of the Merdeka Curriculum, which emphasizes context-based and local culture-based learning.

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