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Trends in Ethnomathematics Research Through Traditional Dance for Primary Mathematics Education: A Bibliometric Analysis

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Abstract. The integration of ethnomathematics rooted in traditional dance into primary school mathematics instruction plays a vital role in connecting students with their cultural heritage while enhancing the relevance of education. This study aims to: (1) analyze the trends and patterns of research related to traditional dance-based ethnomathematics in primary mathematics education; (2) examine various aspects such as annual publication rates, institutional collaborations, and the most frequently used keywords over the past ten years; and (3) identify future research opportunities in the field of ethnomathematics. The method employed is bibliometric analysis, which involves collecting and evaluating data from scientific publications indexed in Scopus from 2016 to 2025. The analysis focuses on citation patterns, author collaborations, and keyword trends. The results reveal a total of 243 scientific documents addressing topics related to ethnomathematics and traditional dance, with an annual publication growth rate of 3.51%. The average number of citations per document stands at 7.741, indicating significant interest from the academic community. This approach has proven effective in enhancing student motivation and engagement cognitively, emotionally, and kinesthetically while also strengthening their cultural identity. The study recommends the development of curricula that prioritize local values and encourage collaboration among academics, educators, and communities. Thus, integrating ethnomathematics into education serves not only as a pedagogical solution but also as a cultural strategy to reinforce national identity in the face of globalization, while equipping the younger generation with stronger critical and creative thinking skills.

Keywords: Ethnomathematics, Traditional Dance, Mathematics Learning, Primary Education, Bibliometric Analysis

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INTRODUCTION

Mathematics is one of the fundamental subjects in the elementary education curriculum, playing a strategic role in developing students' logical, systematic, analytical, and critical thinking skills from an early age (Setiyadi, 2021). These competencies are essential in preparing the younger generation to face the dynamics of 21st-century life, which demands strong numeracy literacy and adaptive problem-solving abilities (Darmastuti et al., 2024). Therefore, mathematics education should not merely be viewed as a medium for mastering arithmetic, but as a vital tool to cultivate higher-order thinking skills (Widana, 2022). In alignment with the Indonesian curriculum and the Pancasila Student Profile, mathematics should be taught in a contextual, integrative, and meaningful manner to fully engage students' cognitive and affective potentials (Nurkholifah et al., 2025).

Nevertheless, the reality of classroom instruction reveals that mathematics teaching at the elementary level is still largely dominated by conventional methods that are abstract, symbolic, and overly procedural (Setiyadi, 2023). Such an approach often creates a cognitive gap between students and the subject matter, making mathematics feel difficult, dull, and disconnected from their daily lives. As a result, students' motivation tends to be low, and their academic performance in mathematics falls below expectations (Munthe, 2023). Elementary school students frequently struggle with understanding fundamental concepts due to the lack of real-life and culturally relevant context. This calls for an innovative approach that bridges abstract mathematical concepts with students' concrete and culturally rooted experiences (Setiyadi, 2020).

To respond to this issue of low relevance and student engagement, the ethnomathematics approach emerges as an innovative solution by integrating local cultural values into the learning process.

Ethnomathematics is understood as a pedagogical approach that situates mathematics within the real-life contexts of communities, drawing on cultural practices that contain mathematical elements (Setiyadi, Munjaji, et al., 2022). This concept challenges the notion of mathematics as purely neutral and universal, recognizing instead that every community possesses its own ways of understanding and applying mathematical principles in daily life (Rizkyh & Setiyadi, 2023). Consequently, ethnomathematics enriches instructional content while strengthening students' cultural identity, fostering a sense of ownership over the material being taught, and encouraging learning rooted in local values (Munjaji & Setiyadi, 2024).

One tangible form of implementing ethnomathematics in elementary education is through the integration of regional arts, such as traditional dance, into mathematics instruction (Oktaviana et al., 2023). As a cultural expression, traditional dance encompasses numerous mathematical concepts, such as patterns, symmetry, transformations, and measurements, which can be naturally explored during learning activities (Setiyadi, Hartono, Rokhman, 2024). Cultural practices including dance, traditional games, and local artworks hold significant potential to shape contextual and multisensory learning experiences for students. The integration of traditional dance into mathematics not only enhances meaningful learning but also contributes to the preservation of local culture while reinforcing the connection between scientific knowledge and living cultural heritage (Zaenuri, 2020).

Traditional dance, as part of intangible cultural heritage, carries not only aesthetic values but also intricate and systematic mathematical structures. Elements such as movement rhythm, repetition of patterns, body and spatial symmetry, and formation layouts in choreography represent concrete manifestations of mathematical concepts suitable for contextual learning. Even spatial aspects of dance such as translation, rotation, and reflection serve as real-life examples of geometric transformations that students often struggle to grasp when taught in purely abstract terms (Kobandaha et al., 2025). Incorporating traditional dance into geometry lessons allows students to visualize and kinesthetically engage with spatial concepts, enhancing both emotional and cognitive understanding (Rohayati et al., 2022). This demonstrates that dance, while inherently affective and aesthetic, can also function as an effective pedagogical tool to ground abstract mathematical concepts in tangible student experiences.

Furthermore, dance properties such as costumes, textile motifs, ornaments, and stage layout embody mathematical elements that can be introduced through exploratory and dialogical methods. For example, symmetrical batik patterns worn by dancers or geometric shapes in headpieces can be used to teach concepts like reflectional and rotational symmetry. Integrating traditional dance into mathematics instruction not only brings students closer to their cultural roots but also stimulates multisensory engagement, enriching the learning experience. This approach aligns with the principles of culturally responsive pedagogy, which positions local culture as an authentic and empowering educational resource (Farih & A'yun, 2024). In elementary school settings, this strategy is particularly valuable, given children's developmental tendency toward concrete thinking, visual learning, and enjoyment of movement and artistic expression (Setiyadi, 2025).

Despite the urgency and relevance of ethnomathematics through traditional dance, comprehensive studies mapping how this topic has been explored within educational research remain scarce. Most existing studies are localized, fragmented, and lack a cohesive overview of the trajectory of research integrating traditional dance into elementary mathematics instruction. Yet, to develop culturally grounded pedagogy in a systematic and sustainable manner, it is crucial to understand the research trends what has been studied, what remains unexplored, and what new opportunities exist in this area.

The absence of studies explicitly mapping the intersection between ethnomathematics and traditional dance in the context of mathematics education at the elementary level reflects a significant gap. Although numerous studies have examined ethnomathematics in local cultural settings and contextual learning, and others have explored the role of art in education, very few have systematically investigated traditional dance as a mathematical resource. This gap becomes more apparent considering that evidence-based approaches have not yet been widely adopted to reconstruct the landscape of knowledge in this domain. In academic development, bibliometric mapping is crucial for identifying the direction, strengths, and limitations of existing scholarship, while serving as a foundation for future, more targeted research.

It is in this context that a bibliometric approach becomes particularly relevant and strategic.

Bibliometric analysis is a quantitative method for reviewing scientific literature that leverages publication metadata to uncover comprehensive trends and dynamics in research. Tools such as co-word analysis, co-citation analysis, and bibliographic coupling enable researchers to examine collaboration patterns, prominent keywords, leading countries and institutions, and thematic evolution in a field (Trimurtini et al., 2021). Using this method, research on ethnomathematics grounded in traditional dance for mathematics education in elementary schools can gain an objective and comprehensive picture of the field what has been done, which areas are underexplored, and what future directions hold potential (Setiyadi, 2025).

The novelty of this study lies in the integration of three key components in elementary education research: (1) the ethnomathematics approach, (2) cultural arts, specifically traditional dance, and (3) bibliometric techniques as a quantitative method to trace the scientific landscape. To date, no prior studies have been found that specifically combine these three elements into a single research framework. Existing studies mostly discuss the integration of local culture in mathematics education in general, without addressing the global trends and specific contributions of traditional dance. Therefore, this article aims to serve as a foundational point for expanding research horizons by highlighting Indonesia's rich cultural heritage as a source of educational innovation in mathematics.

The main objectives of this study are to: (1) analyze trends and patterns in research on ethnomathematics grounded in traditional dance within elementary school mathematics education; (2) examine aspects such as annual publication volume, institutional collaborations, and most frequently used keywords over the past decade; and (3) identify future research opportunities in the field of ethnomathematics. Through this approach, the study seeks to provide a comprehensive understanding of how this topic has evolved, who the key contributors are, and which research areas remain open for further exploration.

METHODS

This study employs a systematic literature review method combined with a bibliometric approach to examine research trends and patterns related to ethnomathematics based on traditional dance in primary school mathematics education during the period from 2016 to 2025. The bibliometric approach enables a quantitative analysis of scientific literature, including citation patterns, author collaborations, geographic distribution, and emerging keyword trends. Moreover, this method aims to map the progression of research using analytical tools such as OpenRefine, VOSviewer, Biblioshiny, and Microsoft Excel. The data analyzed were obtained from a leading academic database, Scopus, and the study adheres to a structured bibliometric analysis procedure. The steps of the bibliometric analysis process are illustrated in Figure 1.

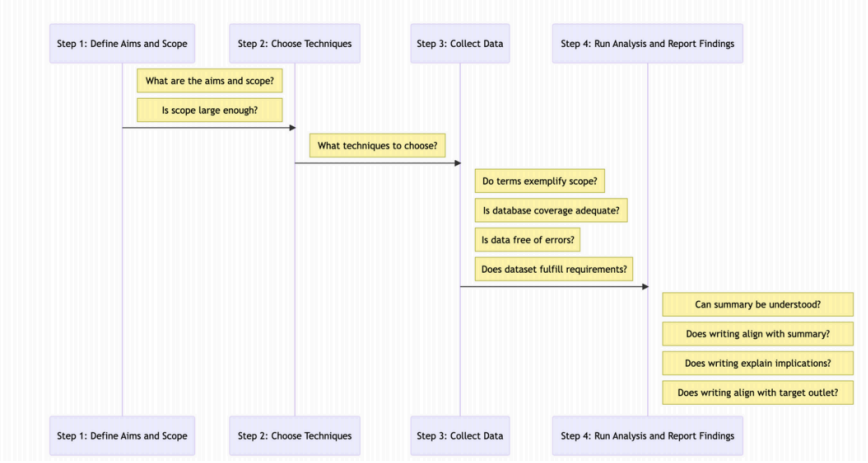

Figure 1. Bibliometric Process Steps (Donthu et al., 2021)

The selection of keywords was carried out carefully to ensure that the analyzed articles were relevant to the keywords, namely *ethnomathematics*, *traditional dance*, and *primary school*. In addition, a search for synonyms for each keyword was conducted, as shown in Table 1.

Table 1. Synonyms for Keywords

ethnomathematics	*Ethnomathematics* OR "Culturally-based mathematics" OR "Cultural mathematics" OR "Mathematics in cultural context" OR "Indigenous mathematics" OR "Contextual mathematics" OR "Mathematics of cultural practices" OR "Mathematical knowledge in culture" OR "Traditional mathematics"*
traditional dance	*"traditional dance" OR "Folk dance" OR "Cultural dance" OR "Indigenous dance" OR "Ethnic dance" OR "Ritual dance" OR "Ceremonial dance"*
primary school	*"Primary school" OR "***Grade school" OR "***Grammar school" OR "Basic school" OR "Lower school" OR "Junior school"*

Table 2. Article Selection Indicators

Indicator	Description
Year	2016-2025
Subject Area	Social Sciences, Arts And Hunmanities, Mathematics, Psychology, Multidisciplinary
Documen Type	Article
Publication Stage	Final
Source Type	Jurnal
Languange	English

RESULTS AND DISCUSSION

Scopus publications using the keywords ethnomathematics, traditional dance, and primary school from 2016 to 2025 are presented in Table 3.

Table 3. Main Information

Timespan	2016:2025
Sources (Journals, Books, etc)	130
Documents	243
Annual Growth Rate %	3.51
Document Average Age	3.46
Average citations per doc	7.741
References	10667
DOCUMENT CONTENTS	
Keywords Plus (ID)	117
Author's Keywords (DE)	755
AUTHORS	
Authors	564
Authors of single-authored docs	41
AUTHORS COLLABORATION	
Single-authored docs	42
Co-Authors per Doc	2.86
International co-authorships %	19.75
DOCUMENT TYPES	
article	243

Source: Bibliometric Analysis through Biblioshiny

Based on the bibliometric data of Scopus publications from 2016 to 2025, a total of 243 scholarly documents addressing issues related to ethnomathematics, traditional dance, and primary school have been identified. These documents come from 130 academic sources, including journals, proceedings, and scholarly books. The annual growth rate of publications is 3.51%, indicating a stable increasing trend for this topic, although it is not yet in the very high category. The average age of the documents

is 3.46 years, which suggests that most of the publications are fairly recent and represent the current development of scientific discourse. With a total of 10,667 references cited across all documents, it is evident that researchers in this field rely on a strong theoretical and conceptual foundation to support their studies. Additionally, the average citation per document is 7.741, indicating that these works have garnered significant attention from the international scientific community.

In terms of content, a total of 755 author-provided keywords and 117 additional keywords from Keywords Plus were found, reflecting the diversity and breadth of topics explored in this literature. A total of 564 authors are involved in the publications, with only 41 of them having authored documents individually. This highlights a high level of scientific collaboration, with an average of 2.86 authors per document. Furthermore, 19.75% of the publications are the result of international collaboration, reflecting the global openness and attention to integrating local cultural values, such as traditional dance, into ethnomathematics-based primary school mathematics teaching. All documents in this dataset are scientific articles, reinforcing the validity and academic quality of the studies included in this mapping.

RQ1. Analyzing the trends and patterns of research on ethnomathematics based on traditional dance in primary school mathematics education.

Based on the VosViewer results with the keywords ethnomathematics, traditional dance, primary school, the results are shown in Figure 2.

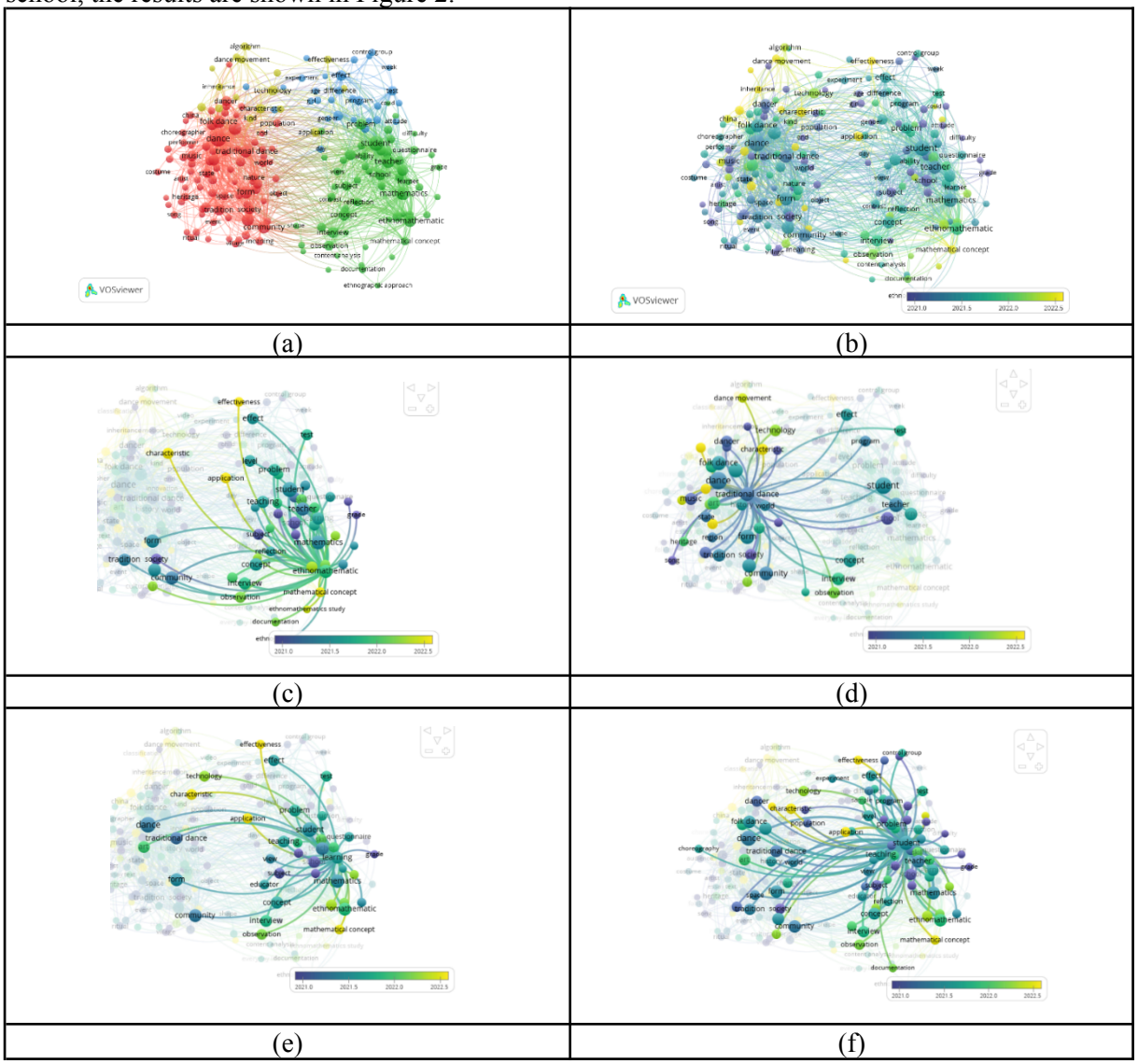

Figure 2. Network Visualization (a); Overlay Visualization (b); ethnomathematics (c); traditional dance (d), learning (e); student (f)

The bibliometric analysis using VOSviewer on Scopus publications from 2016 to 2025 reveals significant developments in research combining ethnomathematics, traditional dance, and primary school mathematics education. Data visualization on ethnomathematics shows that in 2021, the main research focus was on topics such as students, subject, society, and grade. This reflects an emphasis on the social context and student characteristics in culture-based mathematics learning. Research during this period emphasized the importance of understanding students' social backgrounds to enhance the effectiveness of mathematics education.

From 2023 to 2025, the research focus deepened on characteristics, mathematical concepts, application, and effectiveness. Studies during this period evaluated the effectiveness of the ethnomathematics approach in improving students' understanding of mathematical concepts and critical thinking skills. Meta-analysis studies show that ethnomathematics-based learning significantly enhances students' mathematical literacy in primary schools. This emphasizes that approaches integrating local culture in mathematics teaching can improve student learning outcomes.

In the context of traditional dance, VOSviewer analysis showed that in 2021, research focused more on the relationship between traditional dance, society, tradition, and song. This reflects efforts to understand the role of traditional dance in society and how these cultural elements can be integrated into education. Research emphasized the importance of traditional dance as a medium for expressing local knowledge and cultural values. In 2022, the research focus shifted to aspects like observation, interview, folk dance, and technology. Studies during this period explored the use of technology in documenting and analyzing traditional dance, as well as qualitative methods like observation and interviews to understand dance practices in educational contexts. Research demonstrated that integrating technology into traditional dance education can increase student engagement and their understanding of mathematical concepts embedded in dance movements.

From 2023 to 2025, the focus was on characteristics, music, and dance movement. Research during this period highlighted the analysis of dance movement characteristics and music as representations of mathematical concepts such as symmetry, patterns, and rhythm. Studies using artificial intelligence technology to analyze the forms and characteristics of traditional dance movements showed that these could be used as learning resources in primary school mathematics education.

Overall, this bibliometric analysis shows that research combining ethnomathematics, traditional dance, and primary school mathematics education has experienced dynamic development between 2016 and 2025. In the earlier period, research mainly focused on mapping the social context and student characteristics as a foundation for designing appropriate learning approaches. The focus on the social and cultural dimensions of students became an initial basis for understanding how they respond to the subject matter, particularly in mathematics, which has long been viewed as an abstract and context-free discipline. Studies during this stage predominantly used qualitative, exploratory approaches with field practices in local communities.

Over time, research began to shift from exploring social contexts to integrating local culture into mathematics learning. Traditional dance, as a pedagogical entity, began to be involved not only as an art form but also as a medium for learning that embodies mathematical values such as patterns, symmetry, and rhythm. The integration of ethnomathematics concepts and traditional dance elements in primary school mathematics education has been shown to not only increase student engagement in the learning process (Putra et al., 2022) but also provide teachers with a more contextual and meaningful way of delivering content (Sari et al., 2022). The application of this approach gradually gained methodological and conceptual strength, evidenced by publications that examine its effectiveness, characteristics, and real-world applications in the classroom (Jatayu et al., 2024).

Furthermore, the analysis results show that between 2023 and 2025, research entered an evaluative phase with quantitative and mixed methods approaches to measure the effectiveness and impact of ethnocultural-based learning on students' learning outcomes. The results not only focused on methodological innovations but also on sustainability, the transferability of the learning model, and its impact on strengthening students' cultural identities. This approach reflects efforts to elevate local culture as a learning medium that not only enriches the content but also builds confidence, emotional attachment, and deeper conceptual understanding among students (Zahrika & Andaryani, 2023). Thus, integrating local culture into mathematics education is not only a pedagogical solution but also a cultural strategy to strengthen national identity in the face of globalization (Muyassaroh & Sunaryati,

2021).

RQ2. Examining various aspects of the number of publications per year, inter-institutional collaborations, and the most frequently used keywords over the past ten years.

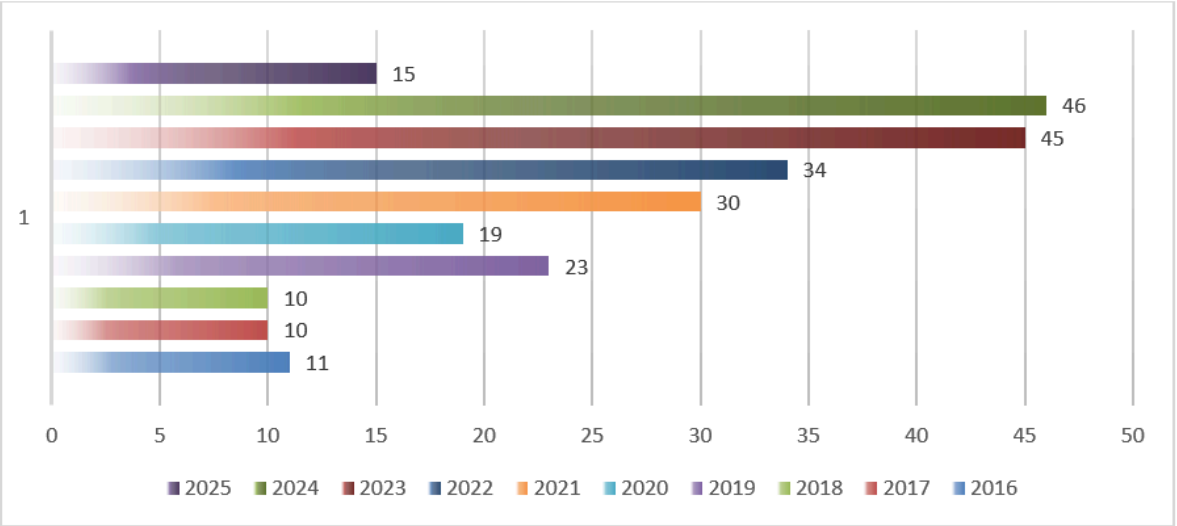

Figure 3. Number of Publications per Year

Data from the bibliometric analysis using Biblioshiny in Figure 3 shows the growth trend of scientific publications on the topics of ethnomathematics, traditional dance, and primary education from 2016 to 2025, which has seen significant development. In the early period (2016–2018), the number of publications was relatively low and stagnant, ranging from 10 to 11 documents per year. This indicates that during this time, the research topic was not yet a major focus in the global academic community. The scarcity of publications also suggests that the integration of local culture such as traditional dance into mathematics education was still considered an unconventional approach in formal education, especially in primary schools.

However, a significant increase began in 2019, with the number of publications rising to 23 documents. This can be seen as the beginning of increased attention from researchers towards the importance of innovative, contextual, and culture-based mathematics education. This trend continued in 2020, with a slight decrease to 19 documents, likely due to the initial impact of the COVID-19 pandemic affecting research activities worldwide. Despite this, the decline was not substantial enough to disrupt the long-term trend, as the number of publications surged again in the following years.

The increase in publications in 2023 and 2024 can also be linked to the maturation of research methodology in this field. Many researchers began using mixed approaches, field experiments, and bibliometric methods to explore the potential of culture-based education. Publications during this period are not only exploratory but also evaluative, measuring the effectiveness of traditional dance-based learning media, achievement of mathematics learning objectives, and the perceptions of teachers and students regarding the ethnomathematics approach. The interdisciplinary nature became a key strength in these publications, as they integrated pedagogy, cultural anthropology, and mathematics.

Interestingly, data shows a significant drop in publications in 2025 up to April, with only 15 publications. This decline could be interpreted in two ways: first, a shift in research focus to related or derivative topics, such as the integration of digital technology in ethnomathematics. Second, this could be due to the cyclical nature of publications, where some are still in the editorial process and not yet recorded in the Biblioshiny database. Nonetheless, the trend over the last decade has made a significant contribution to the development of cultural-based mathematics education science. This shows that research in this area has broad prospects for continued development, both in academic contexts and educational practices.

In this context, the main contribution of these studies lies in the development of learning approaches that emphasize local values and cultural identity while enhancing students' critical thinking and mathematical understanding in primary schools (Asmoro et al., 2023). This strategy is

also considered effective in bridging the gap between the national curriculum and the daily life contexts of students (Alimuddin, 2023). Considering the complexity of educational challenges in the global and digital era (Setiyadi, et al., 2022), the development of culture-based research like this not only enriches the pedagogical field but also serves as a means of preserving cultural heritage within the formal education system. Culture-based mathematics education has positive impacts on student affectivity and cognition, as well as fostering higher motivation for learning (Setiyadi & Muttaqin, 2024). Therefore, despite fluctuations in publication numbers over certain periods, research on ethnomathematics based on traditional dance has promising prospects for further development, especially with a collaborative, interdisciplinary approach combining technology, culture, and pedagogy.

The bibliometric analysis with Biblioshiny in Figure 4, using the Corresponding Author's Countries feature, reveals that the five countries with the highest research collaboration on ethnomathematics, traditional dance, and primary education are Indonesia, the United States, Norway, China, and Turkey. Indonesia's dominant position in this category can be understood considering the rich cultural heritage it has, including hundreds of traditional dances and a wealth of local ethnomathematics to explore. Furthermore, government policies that encourage the strengthening of local wisdom-based education, along with increasing awareness of the importance of contextual approaches to mathematics education in primary schools, have made Indonesia a major contributor to this research landscape. Many researchers from Indonesia are also beginning to actively engage in international collaborations, particularly with universities abroad that focus on multicultural education and pedagogical innovations.

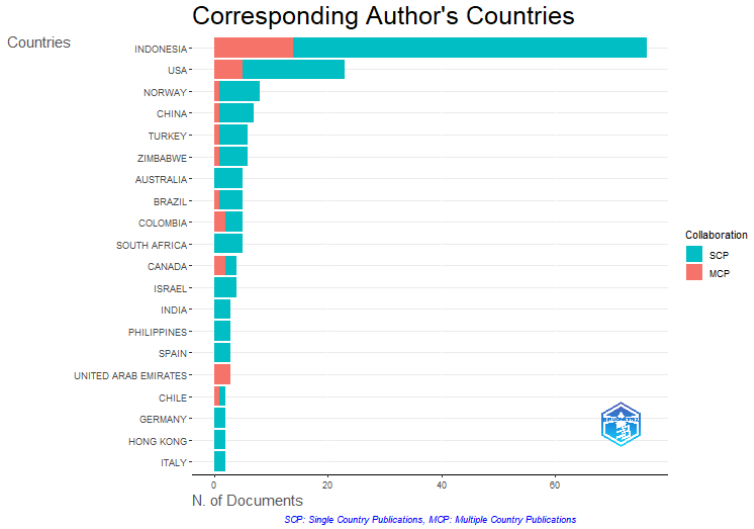

Figure 4. Corresponding Author's Countries

The United States (USA), which ranks second, plays a significant role in the methodology and scholarly publication aspects. As a country with a strong academic tradition and substantial research resources, researchers from the USA often serve as collaborative partners in developing conceptual frameworks, quantitative methodologies, and publishing in reputable journals. The USA's involvement in this topic also reflects their focus on inclusive and multicultural approaches in education. Collaboration with researchers from Global South countries, including Indonesia and China, opens valuable cross-cultural discussions. In some publications, contributions from USA researchers tend to emphasize critical analysis and pedagogical comparisons between countries.

China and Turkey complete the list of the top five countries with the highest corresponding author contributions. In China, the interest in integrating culture into mathematics learning has begun to grow alongside the transformation of the national curriculum, which promotes creativity and local values. China's collaboration with Southeast Asian countries forms part of regional academic diplomacy. Meanwhile, Turkey has shown consistent interest in ethnomathematics research due to its cultural similarities with many countries in Asia and Eastern Europe. Researchers from Turkey are often involved in field studies linking local cultural heritage, including folk dances and artistic patterns, with mathematical concepts such as symmetry, geometry, and patterns. These five countries, with their

diverse cultural and educational backgrounds, show that ethnomathematics research based on traditional dance is not just a local or regional issue but has evolved into a promising global discourse in primary education (Andriono, 2021).

Over the past decade, the bibliometric analysis results show that the most frequently used keywords in publications are divided into three main categories: students, education, and mathematics learning, as shown in Figure 5. The dominance of the keyword "students" emphasizes that the main subject of these studies is students, particularly primary school students. Research focus on students includes various aspects such as their engagement in learning, perceptions of culturally based materials, and the impact of contextual teaching strategies on their motivation, concept understanding, and learning outcomes. This indicates that students are the focal point in ethnomathematics-based learning innovations (Oktaviana et al., 2023), including in the context of using traditional dance as a contextual medium (Kristanti & Sujana, 2022).

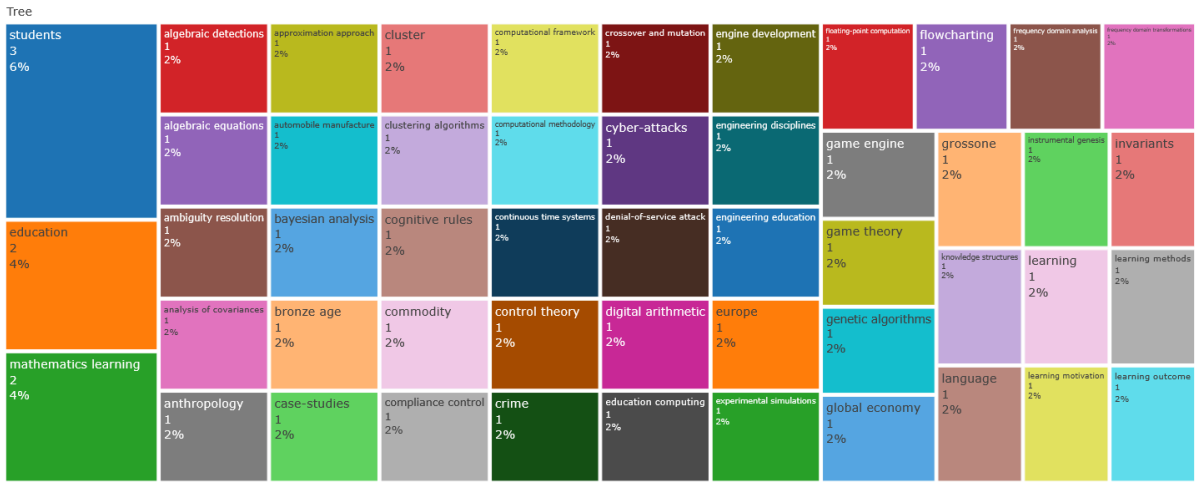

Figure 5. Most Frequently Used Keywords in the Last Ten Years

The second most frequent keyword is "education," which indicates that the ethnomathematics approach is not only positioned as a pedagogical strategy but also as part of the broader discourse in educational reform. Many studies discuss how the integration of local culture through arts and mathematics can promote a more inclusive, holistic, and relevant education for students. Education that incorporates cultural elements aims not only to improve mathematics learning outcomes but also to instill values of identity, diversity, and appreciation for local heritage. In this context, the ethnomathematics approach through traditional dance is seen as a means to bridge the gap between scientific culture and local culture, as well as a tool for preserving culture within education.

Meanwhile, "mathematics learning" appears as the third most dominant keyword, reflecting research focusing on the process and outcomes of learning mathematics. The use of traditional dance in mathematics education exemplifies contextual learning, where mathematical concepts like symmetry, patterns, and geometry are introduced through media that are familiar and meaningful to students (Munjaji & Setiyadi, 2024). Many studies highlight the effectiveness of this strategy in enhancing students' conceptual understanding and critical thinking skills (Sari et al., 2022). Furthermore, ethnomathematics-based mathematics learning is considered to create a more enjoyable and meaningful learning atmosphere, especially for primary school students (Ardiansyah & Nulhakim, 2023). These findings emphasize the importance of innovation in mathematics education that not only focuses on outcomes but also considers the process, cultural context, and student characteristics.

RQ3. Analyzing Future Research Opportunities on Ethnomathematics with Traditional Dance in Mathematics Education in Primary Schools

The opportunities for research on ethnomathematics based on traditional dance in primary school mathematics education remain wide open, especially when linked to local cultural wealth like the Lengger Banyumasan dance. This dance not only has aesthetic value but also contains strong

mathematical elements, such as movement structure, floor patterns, rhythmic repetition, and costume designs (Pravitasari & Widyawati, 2024). In the context of primary education, further research could explore how mathematical representations such as symmetry, patterns, rotation, and angles can be identified and learned through the analysis of Lengger movement. This research holds great potential to develop a contextual approach that more systematically integrates culture with formal education.

One reason for selecting Lengger Banyumasan is that this dance has already been formally introduced to students through extracurricular activities in primary schools, particularly in the Banyumas region and surrounding areas (Setiyadi, Hartono, Rokhman, 2024). With its presence in schools, students are directly exposed to the form, meaning, and techniques of the dance. This condition strongly supports the ethnomathematical approach, where students learn mathematics through cultural activities that have become part of their lives. This not only strengthens their learning motivation but also creates authentic and enjoyable learning experiences. Future research could focus on designing Problem-Based Learning models with mathematics content derived from the structural elements of the Lengger Banyumasan dance.

Moreover, the selection of Lengger as a research object is based on its cognitive and affective potential. The Lengger dance not only teaches movement precision and rhythm but also social values such as discipline, cooperation, and respect for cultural heritage (Bugov, 2024). When mathematical concepts such as time measurement (movement duration), geometric shapes (in floor patterns and costume properties), and data analysis (counting steps or rhythm) are incorporated through dance activities, students not only learn mathematics formally but also intuitively through their bodies and experiences. This is a multimodal approach that suits the learning styles of primary school children, who tend to be active, concrete, and contextual (Setiyadi & Cahyasari, 2023).

In the context of educational research, this approach offers significant scientific contributions as there has been little exploration specifically linking Lengger Banyumasan with mathematics education. Previous studies have tended to focus on cultural aspects, performing arts, or character education, but few have used Lengger as an educational tool for developing numeracy literacy in primary schools. Therefore, this research has high novelty value, particularly in the development of thematic integrated teaching materials or in the development of culture-based learning models. This research is also closely aligned with the demands of the Indonesian Curriculum, which emphasizes differentiation, local uniqueness, and active student participation in the learning process.

Finally, choosing Lengger Banyumasan for the development of ethnomathematics research is not only a form of cultural preservation but also a strategic effort to create education rooted in local identity. Mathematics education, often seen as abstract and rigid, can become more vibrant, engaging, and meaningful when presented through an art form that students have been familiar with since early childhood. By incorporating cultural elements into formal education, we not only bring knowledge closer to real-life experiences but also shape a generation that is proud of its culture while being proficient in logical and analytical thinking. This is a great opportunity that awaits continued exploration, testing, and development through sustained and collaborative research among academics, educators, local artists, and school communities.

CONCLUSION

The integration of ethnomathematics based on traditional dance in mathematics education at the primary school level holds significant urgency, not only as a pedagogical method but also as a bridge to connect students with their cultural heritage. By utilizing elements of traditional dance, such as patterns, symmetry, and rhythm, mathematical concepts, which are often considered abstract, can be presented in a more tangible and relevant context, thus facilitating a deeper and more intuitive understanding for students. Bibliometric analysis results show significant growth in related research, reflecting an increased awareness of the importance of contextual and culture-based education. This approach not only enhances student motivation and engagement cognitively, emotionally, and kinesthetically but also strengthens their cultural identity, fosters pride in their local heritage, and creates an inclusive learning environment. Furthermore, this integration has the potential to open opportunities for the development of curricula that prioritize local values, as well as encourage collaboration between academics, educators, and the community, making it a pedagogical solution that

also functions as a cultural strategy to strengthen national identity amidst the challenges of globalization.

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