p-ISSN: 2086-4280
e-ISSN: 2527-8827

Trends of Ethnomathematics Research in Indonesia: A Bibliometric Analysis from the Scopus Database

Arifin Riadi[1], Turmudi[2*], Dadang Juandi[3]

[1,2*,3]Program Studi Pendidikan Matematika, Universitas Pendidikan Indonesia
Jalan Dr. Setiabudhi No. 229, Bandung, Jawa Barat, Indonesia
[1]arifinriadi@upi.edu; [2]turmudi@upi.edu; [3]dadang.juandi@upi.edu*

Article received: 06-02-2024, revision: 17-03-2024, published: 30-04-2024

Abstrak

Penelitian ini bertujuan untuk menganalisis tren publikasi penelitian etnomatematika di Indonesia menggunakan basis data Scopus. Mengingat pentingnya pendidikan yang kontekstual, penelitian ini berupaya untuk memetakan pertumbuhan dan fokus penelitian etnomatematika di Indonesia, yang dapat menjadi panduan untuk studi selanjutnya dan mendorong kontribusi akademik yang lebih luas dan berdampak. Dengan menggunakan analisis bibliometrik, penelitian ini mengidentifikasi tren publikasi tahunan, perbandingan antara artikel jurnal dan prosiding konferensi, lima penerbit paling diminati, lima artikel yang paling banyak dikutip, lima penulis paling produktif, serta jaringan kolaborasi penulis dan identifikasi topik (ko-okurensi) menggunakan VOSviewer. Hasil penelitian menunjukkan bahwa jumlah publikasi etnomatematika di Indonesia meningkat setiap tahun, dengan prosiding konferensi yang mendominasi dibandingkan artikel jurnal. Lima penerbit utama adalah Journal of Physics: Conference Series, AIP Conference Proceedings, Journal on Mathematics Education, International Journal of Scientific and Technology Research, dan Infinity Journal. Penulis paling produktif adalah Herawaty dan Widada, yang sering berkolaborasi. Artikel yang paling banyak dikutip adalah karya Muhtadi et al. Jaringan kolaborasi penulis menunjukkan bahwa Sutama adalah peneliti dengan koneksi terbanyak, sementara analisis ko-okurensi topik menyoroti fokus pada geometri, budaya, ide-ide matematika, pemecahan masalah, dan pendidikan karakter.
Kata Kunci: Analisis Bibliometrik, Basis Data Scopus, Etnomatematika, Indonesia, Tren.

Abstract

This study aims to analyze the publication trends of ethnomathematics research in Indonesia using the Scopus database. Given the increasing recognition of the importance of contextualized education, this study addresses the need to map the growth and focus areas within Indonesian ethnomathematics research, which can guide future studies and encourage broader, more impactful scholarly contributions. Utilizing bibliometric analysis, this study identifies annual publication trends, comparisons between journal articles and conference proceedings, the five most preferred publishers, the five most cited articles, the five most productive authors, as well as co-authorship and topic identification (co-occurrence) networks using VOSviewer. The results show that the number of ethnomathematics publications in Indonesia has increased year by year, with conference proceedings dominating over journal articles. The top five publishers are Journal of Physics: Conference Series, AIP Conference Proceedings, Journal on Mathematics Education, International Journal of Scientific and Technology Research, and Infinity Journal. The most productive authors are Herawaty and Widada, who frequently collaborate. The most cited article is by Muhtadi et al. The co-authorship network shows that Sutama is the most connected researcher, while the topic co-occurrence analysis highlights a focus on geometry, culture, mathematical ideas, problem-solving, and character education.
Keywords: Bibliometric Analysis, Scopus Database, Ethnomathematics, Indonesia, Trends.

I. INTRODUCTION

The advancement of the times and globalization has led to the gradual forgetting of traditional cultures by society. This poses a threat to the preservation of cultural heritage passed down by ancestors. Therefore, it is crucial to re-emphasize the integration of culture in various aspects of life, including in school education. By integrating culture into education, students not only acquire academic knowledge but also learn about and preserve their culture (Mosimege & Ismael, 2006; Powell & Frankenstein, 1997).

One way to integrate education with culture is through ethnomathematics (Mania & Alam, 2021; Pathuddin et al., 2021). Ethnomathematics is an approach to teaching mathematics that connects mathematical concepts with local culture (Gerdes, 1996). Recent studies have shown that the application of ethnomathematics can enhance students' understanding of mathematical concepts as well as their cultural awareness. For instance, research by Turmuzi et al. (2024) shows that ethnomathematics-based learning can improve students' mathematical communication skills. Another study by Ilma et al. (2024) revealed that the use of interactive multimedia based on ethnomathematics can enhance students' creative thinking skills and learning motivation.

Ethnomathematics was first introduced by Ubiratan D'Ambrosio in 1977 as a field of study that examines how people from various cultures develop and use mathematical concepts in their daily lives. Ethnomathematics connects mathematical practices with the cultural and social contexts in which mathematics develops (Shirley & Palhares, 2016). This concept emphasizes that mathematics is not only a product of Western civilization but also developed in various cultures around the world (D'Ambrosio, 2001; Pramasdyasari, Aini, & Setyawati, 2024)).

The importance of ethnomathematics in education lies not only in the educational aspect but also in cultural preservation (Alangui, 2017; D'Ambrosio, 1997). By applying ethnomathematics, students can see the relevance of mathematics in their daily lives and within their cultural context (Luisa et al., 2018). This can make learning mathematics more engaging and meaningful (Harding, 2021). Additionally, ethnomathematics can help dispel the stereotype that mathematics is a rigid science disconnected from real life (Barton, 1996).

Although there has been considerable research on ethnomathematics, there has not been a specific study analyzing the trends in ethnomathematics research in Indonesia using bibliometric analysis from the Scopus database, at least until the data from 2024. Similar bibliometric analysis research was conducted by Deda et al. (2024) but used Google Scholar and Scopus databases with the PoP (Publish or Perish) application, analyzing data only up to 2022. Another study by Rusli & Safaah (2023) used only the Google Scholar database and only included data up to 2022, as did the bibliometric analysis by Noerhasmalina & Hidayatulloh (2023), which also only included data up to 2022. This study will differ from previous studies as it uses data

p-ISSN: 2086-4280
e-ISSN: 2527-8827

directly from Scopus and includes data covering the entire year up to 2024.

Bibliometric analysis research is crucial as it provides a comprehensive overview of the development and research trends in a particular field of study (Chabowski et al., 2011). This analysis allows for the identification of the most influential authors and institutions in the field (Donthu et al., 2021), as well as the collaboration patterns among them (van Eck & Waltman, 2014). Additionally, bibliometric analysis can help determine the most frequently researched topics and the most cited articles (Ellegaard & Wallin, 2015), which can serve as important references for other researchers. In the context of ethnomathematics in Indonesia, this analysis can help understand how the field is developing, identify key actors in the research, and highlight the main focus topics. This bibliometric analysis can also provide information about the publishers and types of publications most commonly used by researchers in the field (Garfield, 2006), specifically Indonesian researchers in the field of ethnomathematics.

The aim of this study is to analyze the trends in ethnomathematics research publications in Indonesia using the Scopus database. This study will address the following questions: (a) what are the trends in the number of ethnomathematics research publications in Indonesia in the Scopus database each year; (b) comparison between journal articles and proceedings; (c) the five most preferred publishers; (d) the five most cited articles; (e) the five most productive authors; (f) co-authorship and topic identification (co-occurrence) networks using VOSviewer. This research is expected to provide new insights into the development of ethnomathematics research in Indonesia and serve as a foundation for future studies.

II. METHOD

This study employs bibliometric analysis based on literature, which can provide useful references for future research (Kulakli & Osmanaj, 2020). In academic research, it is important to gain a more comprehensive perspective on research trends based on the latest and most relevant sources. A bibliometric profile can illustrate research activities more broadly (Espina et al., 2022). This bibliometric analysis step adopts the PRISMA protocol (Tamur et al., 2023) as shown in Figure 1.

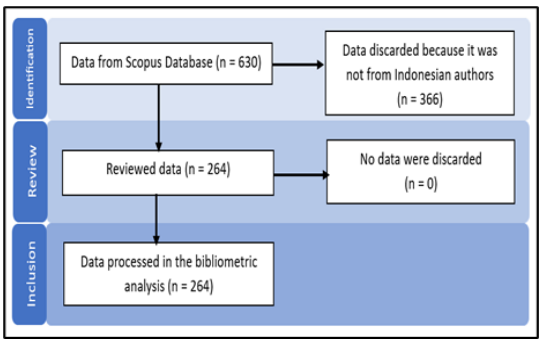

Figure 1. The PRISMA Flow Diagram Used

The research steps based on the PRISMA flowchart, as shown in Figure 1, are as follows: (i) conducting a search by entering the keyword “ethnomathematics” in the document search box with the entry in the Search within box as Article title, Abstract, Keywords (TITLE-ABS-KEY (ethnomathematics)) to obtain data on all documents containing ethnomathematics in the article title, abstract, or keywords, resulting in 630 documents; (ii) applying a filter on Country/territory to Indonesia

(LIMIT-TO (AFFILCOUNTRY, "Indonesia")), resulting in 264 documents; (iii) since all documents meet the criteria, these 264 documents are analyzed.

The focus of this bibliometric analysis is to investigate research trends, including the number of publications over the years, the most productive authors, the most prominent articles based on the number of citations, the publishers most frequently targeted by authors, and the types of publications. VOSviewer is used to provide an overview of research trends (van Eck & Waltman, 2023), specifically in ethnomathematics, regarding co-authorship and the identification of ethnomathematics research topics. Data for this study were obtained on January 13, 2024, directly from the Scopus website.

III. Result and Discussion

Figure 2 shows the number of ethnomathematics publications per year by Indonesian authors based on the Scopus database. It can be seen that the first publication appeared in 2016 with one document, and has tended to increase each year since. This indicates that ethnomathematics research is becoming increasingly popular among academics, particularly in Indonesia.

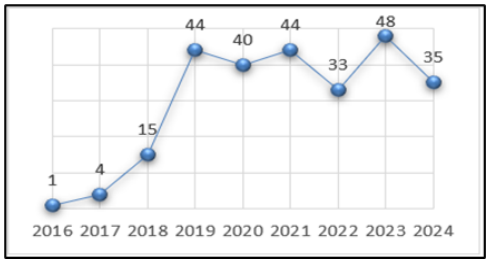

Figure 2. Scopus Publication Trends for Ethnomathematics Research

From the review conducted, the document that initiated its publication on Scopus was a proceeding published by AIP Conference Proceedings, authored by Syahrin, Turmudi, & Puspita, titled "Study ethnomathematics of aboge (alif, rebo, wage) calendar as determinant of the great days of Islam and traditional ceremony in Cirebon Kasepuhan Palace" with the affiliation of Universitas Pendidikan Indonesia (UPI). The study results explain that the calculation activities in the aboge calendar are closely related to the concept of modulo in mathematics (Syahrin et al., 2016). The connection between cultural activities and the modulo concept in mathematics can be an idea or inspiration for future ethnomathematics research. Additionally, the number of publications has tended to increase, and further investigation reveals that the dominance of seminar proceeding publications is almost three times that of journal articles, as shown in Figure 3.

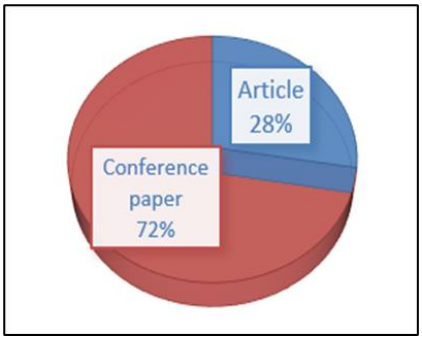

Figure 3. Percentage of Publication Types

Of the 264 documents obtained, 191 are international seminar proceedings indexed by Scopus. Furthermore, this data is supported by the five most prolific ethnomathematics publishers as shown in Table 1.

p-ISSN: 2086-4280
e-ISSN: 2527-8827

Table 1.
Five Publishers with the Most Ethnomathematics Articles

No.	Publisher's Name (with Link)	Publisher's Country	Total
1	Journal of Physics: Conference Series (JPCS)	UK	99
2	AIP Conference Proceedings	USA	85
3	Journal on Mathematics Education	Indonesia	9
4	International Journal of Scientific and Technology Research	India	8
5	Infinity Journal	Indonesia	7

Table 1 shows that the two largest publishers are those for international seminar proceedings, namely JPCS and AIP Conference Proceedings. This indicates that many research findings are presented in the form of conference proceedings, likely because the nature of conferences allows for the rapid and efficient dissemination of research results. Although dominated by proceedings, there is still a variety of publishers, as three out of the five publishers in Table 1 are journals. The dominance of proceedings suggests that the ethnomathematics research community in Indonesia tends to use conferences as the main platform for publishing their research results. Conference proceedings provide a forum for early presentation and discussion, which can accelerate the dissemination of new ideas. Regarding author productivity, the five most productive authors based on the Scopus database can be seen in Table 2.

Table 2.
Five Most Productive Authors

No.	Author	Affiliation	Total Publication
1	Herawaty	Universitas Bengkulu	15
2	Widada	Universitas Bengkulu	15
3	Zaenuri	Universitas Negeri Semarang	12
4	Prahmana	Universitas Ahmad Dahlan	10
5	Supriadi	Universitas Pendidikan Indonesia	9

Based on Table 2, it can be seen that Herawaty and Widada dominate the number of publications related to ethnomathematics research, each with 15 documents. Both authors are affiliated with Universitas Bengkulu. The review results indicate that these two authors frequently conduct collaborative research. Out of the 15 published documents, 13 were collaborative publications. This finding suggests that one effective way to increase the number of scientific publications is by engaging in collaborative research with other relevant authors.

Based on the articles published by Herawaty and Widada, the following research topics were identified: (1) Mathematical Processes of Students, where the authors investigated how students formulate and simplify mathematical concepts within the learning context to understand basic mathematical concepts (Widada, Herawaty, Beka, et al., 2020; Widada, Herawaty, Jumri, et al., 2019a); (2) Mathematical Problem Solving, which frequently appears in the authors' articles, exploring how the ethnomathematics approach can enhance

students' problem-solving skills (Herawaty et al., 2018; Lubis et al., 2021; Nugroho et al., 2019); (3) Understanding Mathematical Concepts, focusing on how students understand mathematical concepts through ethnomathematics learning, such as vector concepts (Widada, Herawaty, Beka, et al., 2020), graph concepts (Widada, Herawaty, Andriyani, et al., 2020), infinite series (Widada, Efendi, et al., 2020), functions (Herawaty, Widada, et al., 2020), parallel axioms (Herawaty, Khrisnawati, et al., 2020), derivative functions (Widada, Herawaty, Nugroho, et al., 2019), and geometry (Widada, Herawaty, Jumri, et al., 2019a); (4) Students' Thinking and Cognitive Processes, where the authors studied students' thinking processes (Widada, Herawaty, Andriyani, et al., 2020) and cognitive processes (Herawaty, Khrisnawati, et al., 2020) in solving mathematical problems, with results indicating that a deep understanding of students' cognitive processes can help teachers develop more effective teaching strategies; (5) Students' Understanding Difficulties, providing insights into strategies to overcome these difficulties (Widada, Herawaty, Rahman, et al., 2020); (6) Realistic Mathematics Learning Based on Ethnomathematics, showing how realistic and ethnomathematics-based mathematics learning approaches can enhance students' understanding of mathematical concepts by relating the material to local cultural contexts (Herawaty, Widada, et al., 2020; Lubis et al., 2021; Widada et al., 2018; Widada, Herawaty, Beka, et al., 2020); (7) Inquiry Learning Models, finding that this approach can significantly improve students' understanding skills (Widada, Herawaty, Jumri, et al., 2019b); (8) Students' Metacognition, exploring students' metacognition, which is their awareness and understanding of their own thought processes in solving mathematical problems, with the research showing the importance of developing students' metacognition to improve their problem-solving abilities (Herawaty et al., 2018).

Although ethnomathematics publications are dominated by Herawaty and Widada, the most cited article to date is by Muhtadi, as shown in Table 3.

Table 3.
Five Most Cited Articles

No.	Authors	Title	Source	Total Citation
1	Muhtadi et al. (2017)	Sundanese ethnomathematics: Mathematical activities in estimating, measuring, and making patterns	Journal on Mathematics Education	62
2	Risdiyanti & Prahmana (2018)	Ethnomathematics: Exploration in Javanese culture	Journal of Physics: Conference Series (JPCS)	47
3	Abdullah (2017)	Ethnomathematics in perspective of sundanese culture	Journal on Mathematics Education	44
4	Widada et al. (2018)	Realistic mathematics learning based on the ethnomathematics in Bengkulu to improve students' cognitive level	Journal of Physics: Conference Series (JPCS)	41

5	Supiyati et al. (2019)	Ethnomathematics in sasaknese architecture	Journal on Mathematics Education	39

According to the results in Table 3, the article titled "Sundanese ethnomathematics: Mathematical activities in estimating, measuring, and making patterns" received the most citations, totaling 62. The article explains that the Sundanese ethnic group has its own methods for estimating, measuring, and making patterns (Muhtadi et al., 2017). These findings can serve as a reference for ethnomathematics research in Indonesia, suggesting that the activities of cultural groups can be studied to find connections between these activities and formal mathematical concepts. The high number of citations indicates that this article is frequently used as a guide by other researchers in developing and expanding ethnomathematics research in different cultural groups.

To obtain an overview of co-authorship networks in scientific work, VOSviewer can be used with the criteria: documents with a maximum of 25 authors, each author having at least four documents, resulting in 40 data points that meet the criteria, but only the interconnected ones are displayed, leaving 11 as shown in Figure 4. From Figure 4, it is found that: (1) Sutama: The largest and most connected node in the network, indicating that Sutama is a highly productive researcher who frequently collaborates with many other researchers; (2) Faiziyah, Ishartono, Nurcahyo, Adnan, and Hardianti: These researchers frequently collaborate with Sutama, as indicated by the thick lines connecting them; (3) Kholid: The green node indicates that this researcher has been active in recent years. His collaborations with other researchers are also quite frequent, especially with Sutama; (4) Yellow Nodes (Ishartono and Nurcahyo): These researchers show more recent activity in this network, indicating their latest publications or collaborations; (5) Turmudi, Juandi, Hendriyanto, and Murtafiah: These smaller, more isolated nodes from the main network suggest that they have fewer collaborations or publications that are not connected to the main researchers in this network.

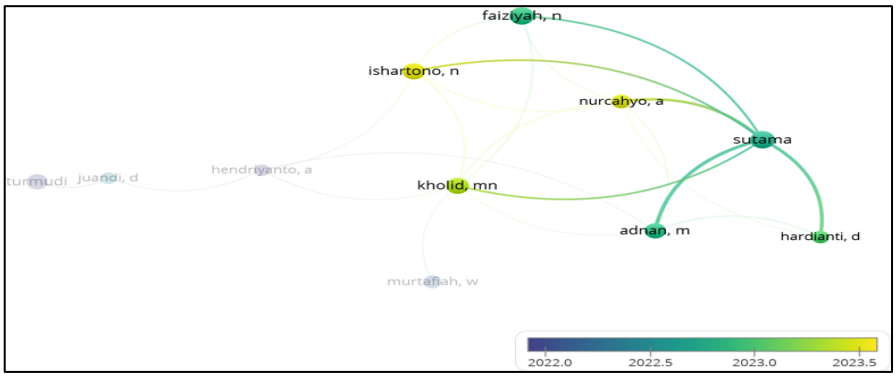

Figure 4. Co-authorship based on Scopus Database

To gain an overview of the themes or topics of ethnomathematics research, the co-occurrence option was used with the criteria: the minimum occurrence of keywords is two, resulting in 26 keywords as shown in Figure 5. From Figure 5, it was found that: (1) Geometry, Culture, Mathematical Ideas: These topics have relatively large nodes and are closely connected with ethnomathematics, indicating that research on ethnomathematics is often associated with geometry, culture, and mathematical ideas; (2) Problem-solving, Primary School, Character Education: These topics also frequently appear together with ethnomathematics, indicating that research in this field is often related to primary education, problem-solving, and character education; (3) Local Wisdom, Effectiveness, Numeracy Skills: The yellow color on these nodes indicates that these topics appear more frequently in recent research. This may suggest emerging research trends, where researchers are increasingly exploring how local wisdom, the effectiveness of teaching methods, and numeracy skills are related to ethnomathematics; (4) Sundanese, Yogyakarta Culture, Batik: These nodes show specific connections to certain cultures, such as Sundanese and Yogyakarta cultures, as well as cultural elements like batik. This indicates that ethnomathematics research in Indonesia often explores how mathematical concepts are applied and understood within local cultural contexts; (5) Ethnomodeling, Mathematical Connection: These topics are connected with many other nodes, indicating their significant role in bridging various aspects of ethnomathematics research. Ethnomodeling and mathematical connections are often used as approaches to link mathematical concepts with local culture.

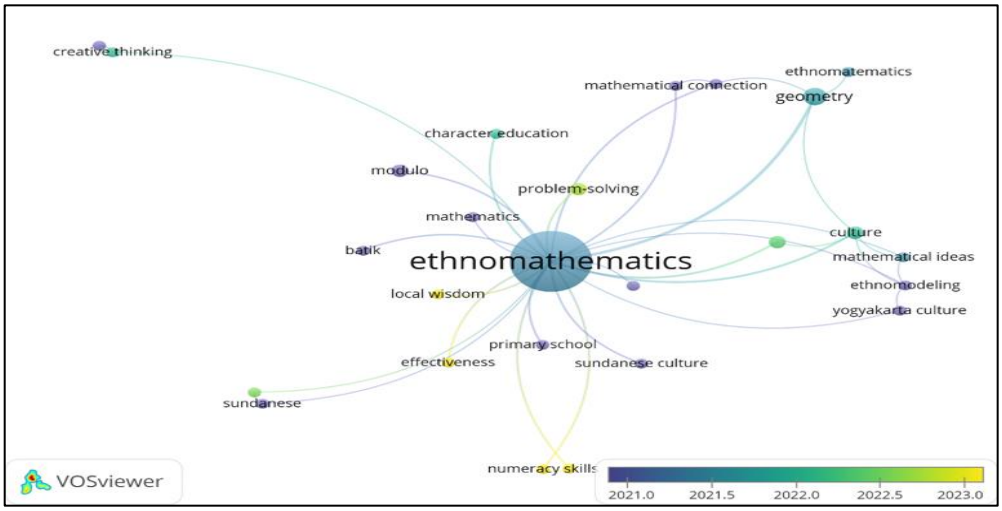

Figure 5. Topics and Novelty of Ethnomathematics Research in Indonesia

From the network visualization in Figure 5, it can be seen that ethnomathematics is a very central and broad topic, encompassing various aspects of education and culture. Research in this field is often related to geometry, culture, mathematical ideas, problem-solving, and character education. Topics such as local wisdom, effectiveness of teaching methods, and numeracy skills indicate the latest trends in

p-ISSN: 2086-4280
e-ISSN: 2527-8827

ethnomathematics research. The connections to specific cultures such as Sundanese and Yogyakarta, as well as cultural elements like batik, show a strong local focus within the themes of ethnomathematics.

IV. CONCLUSION

This study successfully identified and analyzed the trends in ethnomathematics research in Indonesia using data from the Scopus database. The analysis reveals a notable increase in ethnomathematics publications in Indonesia since 2016, reaching its highest point in 2023. A majority of these publications are found in international seminar proceedings rather than journal articles, suggesting that researchers tend to favor conferences for sharing their findings. The five most frequently utilized publication platforms include the *Journal of Physics: Conference Series*, *AIP Conference Proceedings*, *Journal on Mathematics Education*, *International Journal of Scientific and Technology Research, and Infinity Journal.* The analysis also identifies Herawaty and Widada from Universitas Bengkulu as the most prolific authors, both of whom are highly active in collaborative research. The most cited work in this area is a study by Muhtadi et al. on ethnomathematics in Sundanese culture. Moreover, the collaboration network analysis highlights Sutama as the most well-connected researcher, demonstrating significant collaborative efforts with other researchers. Topic analysis shows that ethnomathematics research in Indonesia frequently addresses themes related to geometry, cultural elements, mathematical ideas, problem-solving, and character education, with recent trends emphasizing local wisdom and the efficacy of teaching methods.

Based on the conclusions of this study, several recommendations can be proposed to further advance ethnomathematics research in Indonesia. First, it is essential to strengthen research collaboration; given its role in enhancing both the quantity and quality of publications, researchers in ethnomathematics are encouraged to broaden their collaborative networks domestically and internationally to gain diverse perspectives and expand their research scope. Second, considering the prevalence of conference proceedings in ethnomathematics publications, researchers should utilize these platforms to present preliminary findings and receive feedback from peers before submitting final results to reputable journals. Third, it is recommended that researchers focus on developing studies that connect ethnomathematics with key topics like geometry, culture, mathematical ideas, problem-solving, character education, and local wisdom, as well as investigate effective teaching methods. To boost research visibility and impact, researchers are also advised to diversify their publications by submitting to both conference proceedings and high-impact international journals.

Additionally, in light of the role of ethnomathematics in enhancing mathematical understanding, educators are encouraged to integrate this approach into curricula and teaching methods, making mathematics more relevant and engaging for students. Leveraging

technology is also crucial; researchers are advised to use interactive multimedia and online learning platforms to create and disseminate innovative, effective ethnomathematics teaching methods. Further research is needed to explore trends and developments in ethnomathematics across other regions of Indonesia and to compare these findings with studies from other countries, thereby providing a more comprehensive view of the field. By implementing these recommendations, it is hoped that ethnomathematics research in Indonesia will continue to expand, offering valuable contributions to mathematics education and cultural preservation.

REFERENCES

Abdullah, A. S. (2017). Ethnomathematics in perspective of sundanese culture. *Journal on Mathematics Education*, *8*(1), 1–16. https://doi.org/10.22342/jme.8.1.3877.1-15

Alangui, W. V. (2017). Ethnomathematics and Culturally Relevant Mathematics Education in the Philippines. In M. Rosa et al. (Ed.), *Ethnomathematics and its Diverse Approaches for Mathematics Education* (ICME-13 Monographs, pp. 183–208). Springer International Publishing. https://doi.org/10.1007/978-3-319-59220-6_8

Barton, W. D. (1996). *Ethnomathematics: Exploring cultural diversity in mathematics* [Doctoral Thesis]. The University of Auckland.

Chabowski, B. R., Mena, J. A., & Gonzalez-Padron, T. L. (2011). The Structure of Sustainability Research in Marketing, 1958-2008: A Basis for Future Research Opportunities. *Journal of the Academy of Marketing Science*, *39*(1), 55–70. https://doi.org/10.1007/s11747-010-0212-7

D'Ambrosio, U. (1997). Ethnomathematics and Its Place in the History and Pedagogy of Mathematics. In A. B. Powell & M. Frankenstein (Eds.), *Ethnomathematics: Challenging Eurocentrism in Mathematics Education* (pp. 13–24). State University of New York Press.

D'Ambrosio, U. (2001). *Ethnomathematics. Link Between Traditions and Modernity*. Rotterdam: Sense Publishers.

Deda, Y. N., Disnawati, H., Tamur, M., & Rosa, M. (2024). Global Trend of Ethnomathematics Studies of The Last Decade: A Bibliometric Analysis. *Infinity Journal*, *13*(1), 233–250. https://doi.org/10.22460/infinity.v13i1.p233-250

Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to Conduct a Bibliometric Analysis: An Overview and Guidelines. *Journal of Business Research*, *133*, 285–296. https://doi.org/10.1016/j.jbusres.2021.04.070

Ellegaard, O., & Wallin, J. A. (2015). The Bibliometric Analysis of Scholarly Production: How Great is the Impact? *Scientometrics*, *105*(3), 1809–1831. https://doi.org/10.1007/s11192-015-1645-z

Espina, E., Marbán, J. M., & Maroto, A. (2022). A Retrospective Look at the

Research on Dyscalculia from a Bibliometric Approach. *Revista de Educacion*, *2022*(396), 201–229. https://doi.org/10.4438/1988-592X-RE-2022-396-535

Garfield, E. (2006). The History and Meaning of the Journal Impact Factor. *JAMA*, *295*(1), 90–93.

Gerdes, P. (1996). Ethnomathematics and mathematics education. In *International handbook of mathematics education* (pp. 909–944). Kluwer Academic Publisher.

Harding, J. L. (2021). Ethnomathematics Affirmed Through Cognitive Mathematics and Academic Achievement: Quality Mathematics Teaching and Learning Benefits. In M. Danesi (Ed.), *Handbook of Cognitive Mathematics* (pp. 1–30). Springer International Publishing. https://doi.org/10.1007/978-3-030-44982-7_5-1

Herawaty, D., Khrisnawati, D., Widada, W., Mundana, P., & Anggoro, A. F. D. (2020). The Cognitive Process of Students in Understanding the Parallels Axiom Through Ethnomathematics Learning. *SEADRIC 2019, Journal of Physics: Conference Series*, *1470*(1), 1–7. https://doi.org/10.1088/1742-6596/1470/1/012077

Herawaty, D., Widada, W., Adhitya, A., Sari, R. D. W., Novianita, L., & Anggoro, A. F. D. (2020). Students' Ability to Simplify the Concept of Function Through Realistic Mathematics Learning with the Ethnomathematics Approach. *SEADRIC 2019, Journal of Physics: Conference Series*, *1470*(1), 1–7. https://doi.org/10.1088/1742-6596/1470/1/012031

Herawaty, D., Widada, W., Novita, T., Waroka, L., & Lubis, A. N. M. T. (2018). Students' Metacognition on Mathematical Problem Solving Through Ethnomathematics in Rejang Lebong, Indonesia. *6th SEA-Dr IC, Journal of Physics: Conference Series*, *1088*, 1–6. https://doi.org/10.1088/1742-6596/1088/1/012089

Ilma, I., Riyadi, R., & Usodo, B. (2024). Improving Creative Thinking Skills and Learning Motivation Through Ethnomathematics-Based Interactive Multimedia: An Experimental Study in Primary School. *Multidisciplinary Science Journal*, *6*(8), 1–13. https://doi.org/10.31893/multiscience.2024141

Kulakli, A., & Osmanaj, V. (2020). Global Research on Big Data in Relation with Artificial Intelligence (A Bibliometric Study: 2008-2019). *International Journal of Online and Biomedical Engineering*, *16*(2), 31–46. https://doi.org/10.3991/ijoe.v16i02.12617

Lubis, A. N. M. T., Widada, W., Herawaty, D., Nugroho, K. U. Z., & Anggoro, A. F. D. (2021). The Ability to Solve Mathematical Problems Through Realistic Mathematics Learning Based on Ethnomathematics. *MASEIS 2019, Journal of Physics: Conference Series*, *1731*(1), 1–6. https://doi.org/10.1088/1742-6596/1731/1/012050

Luisa, M. M., Diomedes, F., Marcos, C. N., & Orlando, G. M. (2018). Articulation of Ethnomathematical Knowledge in the Intercultural Bilingual Education of the Guna People. *Educational Research and Reviews*, *13*(8), 307–318. https://doi.org/10.5897/err2017.3438

Mania, S., & Alam, S. (2021). Teachers' Perception toward the Use of Ethnomathematics Approach in Teaching Math. *International Journal of Education in Mathematics, Science and Technology*, *9*(2), 282–298. https://doi.org/10.46328/IJEMST.1551

Mosimege, M., & Ismael, A. (2006). Ethnomathematical Studies on Indigenous Games: Examples from Southern Africa. In F. Favilli (Ed.), *Ethnomathematics and Mathematics Education: Proceedings of the 10th International Congress of Mathematics Education Copenhagen* (pp. 119–138). Tipografia editrice Pisana.

Muhtadi, D., Sukirwan, Warsito, & Prahmana, R. C. I. (2017). Sundanese ethnomathematics: Mathematical activities in estimating, measuring, and making patterns. *Journal on Mathematics Education*, *8*(2), 185–198. https://doi.org/10.22342/jme.8.2.4055.185-198

Noerhasmalina, N., & Hidayatulloh, H. (2023). Mapping the Landscape: Growth and Trends in Ethnomathematics Research-A Bibliometric Review. *Al-Jabar: Journal of Mathematics Education*, *14*(1), 216–225.

Nugroho, K. U. Z., Widada, W., Zamzaili, Z., & Herawaty, D. (2019). The Ability to Solve Mathematical Problems through Youtube based Ethnomathematics Learning. *International Journal of Scientific and Technology Research*, *8*(10), 1432–1437.

Pathuddin, H., Kamariah, K., & Nawawi, M. I. (2021). Buginese Ethnomathematics: Barongko Cake Explorations as Mathematics Learning Resources. *Journal on Mathematics Education*, *12*(2), 295–312. https://doi.org/10.22342/jme.12.2.12695.295-312

Powell, A. B., & Frankenstein, M. (1997). *Ethnomathematics: Challenging Eurocentrism in Mathematics Education*. Albany, N.Y.: State University of New York Press.

Pramasdyasari, A. S., Aini, S. N., & Setyawati, R. D. (2024). Enhancing Students' Mathematical Critical Thinking Skills through Ethnomathematics Digital Book STEM-PjBL. *Mosharafa: Jurnal Pendidikan Matematika*, *13*(1), 97-112.

Risdiyanti, I., & Prahmana, R. C. I. (2018). Ethnomathematics: Exploration in Javanese culture. *Journal of Physics: Conference Series*, *943*(1). https://doi.org/10.1088/1742-6596/943/1/012032

Rusli, R., & Safaah, T. N. (2023). Research Trend on Ethnomathematics from 2012 to 2022: A Bibliometric Analysis. *Indonesian Journal of Science and Mathematics Education*, *6*(1), 37–47. https://doi.org/10.24042/ijsme.v5i1.14794

Shirley, L., & Palhares, P. (2016). Ethnomathematics and its Diverse Pedagogical Approaches. In M. Rosa,

U. D'Ambrosio, D. C. Orey, L. Shirley, W. V. Alangui, P. Palhares, & M. E. Gavarrete (Eds.), *Current and Future Perspective of Ethnomathematics as a Program* (pp. 13–17). Springer.

Supiyati, S., Hanum, F., & Jailani. (2019). Ethnomathematics in sasaknese architecture. *Journal on Mathematics Education*, *10*(1), 47–57. https://doi.org/10.22342/jme.10.1.5383.47-58

Syahrin, M. A., Turmudi, T., & Puspita, E. (2016). Study Ethnomathematics of Aboge (alif, rebo, wage) Calendar as Determinant of the Great Days of Islam and Traditional Ceremony in Cirebon Kasepuhan Palace. *AIP Conference Proceedings*, *1708*. https://doi.org/10.1063/1.4941172

Tamur, M., Wijaya, T. T., Nurjaman, A., Siagian, M. D., & Perbowo, K. S. (2023). Ethnomathematical Studies in the Scopus Database Between 2010-2022: A Bibliometric Review. *ICEHHA 2022: Proceedings of the 2nd International Conference on Education, Humanities, Health and Agriculture*, 199–207. https://doi.org/10.4108/eai.21-10-2022.2329666

Turmuzi, M., Suharta, I. G. P., Astawa, I. W. P., & Suparta, I. N. (2024). Meta-Analysis of the Effectiveness of Ethnomathematics-Based Learning on Student Mathematical Communication in Indonesia. *International Journal of Evaluation and Research in Education*, *13*(2), 903–913. https://doi.org/10.11591/ijere.v13i2.25475

van Eck, N. J., & Waltman, L. (2014). Visualizing Bibliometric Networks. In *Measuring Scholarly Impact* (pp. 285–320). Springer International Publishing. https://doi.org/10.1007/978-3-319-10377-8_13

van Eck, N. J., & Waltman, L. (2023). *VOSviewer Manual*. Universiteit Leiden.

Widada, W., Efendi, S., Herawaty, D., Nugroho, K. U. Z., & Putri, F. R. (2020). The Genetic Decomposition of Students about Infinite Series Through the Ethnomathematics of Bengkulu, Indonesia. *SEADRIC 2019, Journal of Physics: Conference Series*, *1470*(1), 1–8. https://doi.org/10.1088/1742-6596/1470/1/012078

Widada, W., Herawaty, D., Andriyani, D. S., Marantika, R., Yanti, I. D., & Anggoro, A. F. D. (2020). The Thinking Process of Students in Understanding the Concept of Graphs During Ethnomathematics Learning. *SEADRIC 2019, Journal of Physics: Conference Series*, *1470*(1), 1–7. https://doi.org/10.1088/1742-6596/1470/1/012072

Widada, W., Herawaty, D., Beka, Y., Sari, R. M., Riyani, R., & Nugroho, K. U. Z. (2020). The Mathematization Process of Students to Understand the Concept of Vectors Through Learning Realistic Mathematics and Ethnomathematics. *SEADRIC 2019, Journal of Physics: Conference Series*, *1470*(1), 1–9. https://doi.org/10.1088/1742-6596/1470/1/012071

Widada, W., Herawaty, D., Jumri, R., Zulfadli, Z., & Damara, B. E. P. (2019a).

Characteristics of Students Thinking in Understanding Geometry in Learning Ethnomathematics. *International Journal of Scientific and Technology Research*, *8*(11), 3496–3503.

Widada, W., Herawaty, D., Jumri, R., Zulfadli, Z., & Damara, B. E. P. (2019b). The Influence of the Inquiry Learning Model and The Bengkulu Ethnomathematics toward the Ability of Mathematical Representation. *SAMSES 2018, Journal of Physics: Conference Series*, *1318*(1), 1–5. https://doi.org/10.1088/1742-6596/1318/1/012085

Widada, W., Herawaty, D., & Lubis, A. N. M. T. (2018). Realistic mathematics learning based on the ethnomathematics in Bengkulu to improve students' cognitive level. *Journal of Physics: Conference Series*, *1088*. https://doi.org/10.1088/1742-6596/1088/1/012028

Widada, W., Herawaty, D., Nugroho, K. U. Z., & Anggoro, A. F. D. (2019). The ability to Understanding of the Concept of Derivative Functions for Inter-Level Students during Ethnomathematics Learning. *ICCOMSET 2018, Journal of Physics: Conference Series*, *1179*(1), 1–6. https://doi.org/10.1088/1742-6596/1179/1/012056

Widada, W., Herawaty, D., Rahman, M. H., Yustika, D., Gusvarini, E. P., & Anggoro, A. F. D. (2020). Overcoming the Difficulty of Understanding Systems of Linear Equations Through Learning Ethnomathematics. *SEADRIC 2019, Journal of Physics: Conference Series*, *1470*(1), 1–13. https://doi.org/10.1088/1742-6596/1470/1/012074

AUTHOR'S BIOGRAPHY

Arifin Riadi, M.Pd.

Born in Nagara, December 21, 1990. A Mathematics Education lecturer at Universitas PGRI Kalimantan. Completed a Bachelor's degree in Mathematics Education at Universitas Lambung Mangkurat Banjarmasin in 2012, and a Master's degree in Mathematics Education at Universitas Negeri Yogyakarta in 2014. Currently pursuing doctoral studies at Universitas Pendidikan Indonesia.

Prof. Turmudi, M.Ed., M.Sc., Ph.D.

Born in Ciamis, January 12, 1961. Currently a lecturer in the Mathematics Education Study Program at FPMIPA, Universitas Pendidikan Indonesia. Completed a Bachelor's degree in Mathematics Education at IKIP Bandung, graduating in 1986; a Master's degree in Math Education at La Trobe University, Australia, graduating in 1997; a Master's degree in Instructional Design at Twente University, Netherlands, graduating in 1999; and a Ph.D. in Math Education at La Trobe University, Australia, graduating in 2007.

Prof. Dr. Dadang Juandi, M.Si.

Born in Tasikmalaya, January 17, 1964. Currently he is head of the Mathematics Education Study Program, FPMIPA UPI Bandung. He completed his bachelor's degree at UPI Bandung in 1989, his master's degree at UGM in 1997 and his doctoral degree at UPI Bandung in 2000.