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ETHNOMATHEMATICS COMIC MEDIA IN PRIMARY MATHEMATICS LEARNING: A REVIEW OF RESEARCH TRENDS (2019–2025)

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Abstract
Mathematics education in primary schools often faces challenges, such as low student engagement and difficulty in understanding abstract concepts. Ethnomathematics comics are a contextual and engaging learning medium, believed to address these issues by providing visualisations and narratives connected to students' local culture. The objective of this study is to identify and analyse research trends on ethnomathematics comic media in primary school mathematics education from 2019 to 2025 using the Systematic Literature Review (SLR) method. This objective is important to understand the direction of existing studies, identify gaps in the literature, and provide a foundation for further research and the development of media that is more relevant to contextual learning needs. Analysis was conducted using Publish or Perish (PoP) and VOSviewer, resulting in 9 journal articles and 2 conference proceedings indexed in Google Scholar and Scopus from the period 2019–2025. The research findings indicate that (1) the trend of ethnomathematics comic research continues to develop and remains relevant in the context of primary education; (2) the dominant cultural elements integrated into the comics are local cultures familiar to students and adapted to the unique characteristics of each region; and (3) the use of ethnomathematics comics has proven effective in enhancing students' conceptual understanding and learning engagement in primary schools. These findings suggest the potential for developing more contextually relevant, culture-based educational media. Additionally, they provide new directions for research and practice in primary education.
Keywords: *ethnomathematics; comics; mathematics education; primary school students*

Abstrak
Pembelajaran matematika di sekolah dasar sering menghadapi masalah, seperti kurangnya partisipasi aktif siswa dan kesulitan untuk memahami konsep abstrak. Komik etnomatematika merupakan media pembelajaran yang kontekstual dan menarik, dianggap dapat menyelesaikan masalah tersebut dengan menghadirkan visualisasi dan narasi yang terhubung dengan budaya lokal siswa. Tujuan dari penelitian ini adalah untuk mengidentifikasi dan menganalisis tren penelitian mengenai media komik etnomatematika dalam pembelajaran matematika SD pada rentang tahun 2019–2025 melalui metode Systematic Literature Review (SLR). Tujuan ini penting untuk mengetahui arah perkembangan studi yang ada, menemukan celah dalam literatur, dan memberikan dasar untuk penelitian lanjutan serta praktik pengembangan media yang lebih relevan dengan kebutuhan pembelajaran kontekstual. Analisis berbantuan Publish or Perish (PoP) dan VOSviewer, sehingga didapat 9 artikel jurnal dan 2 prosiding yang terindeks Google Scholar dan Scopus dari rentang tahun 2019-2025. Hasil penelitian menunjukkan bahwa (1) tren penelitian komik etnomatematika terus berkembang dan tetap relevan dalam konteks pendidikan dasar; (2) unsur budaya yang dominan diintegrasikan dalam komik adalah budaya lokal yang familiar bagi siswa dan disesuaikan dengan kekhasan masing-masing daerah; dan (3) penggunaan komik etnomatematika terbukti efektif dalam meningkatkan pemahaman konsep serta keterlibatan belajar siswa sekolah dasar. Hasil ini menunjukkan bahwa ada kemungkinan untuk mengembangkan media pembelajaran yang lebih kontekstual yang berbasis budaya. Selain itu, memberikan arah baru bagi penelitian dan praktik pendidikan dasar.
Kata Kunci: etnomatematika; komik; pembelajaran matematika; siswa SD

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Introduction

Mathematics as a basic subject plays an important role in developing students' logical, analytical, and systematic thinking skills from primary school onwards. However, in reality, many students still consider mathematics to be a difficult, abstract subject that is irrelevant to everyday life. In such situations, effective learning media are needed that can connect students' experiences with abstract mathematical concepts. Ethnomathematics comics are one innovative and relevant alternative. The ethnomathematics approach allows the integration of mathematical concepts with local culture, making learning more contextual and meaningful. On the other hand, comics as a narrative-visual medium have the ability to present material in an engaging and communicative manner. The use of ethnomathematics comics is considered capable of enhancing learning motivation, conceptual understanding, and strengthening students' cultural identity, in the 21st-century education era that emphasises cultural literacy and contextualisation.

Learning for primary school students should fundamentally involve efforts to teach and provide opportunities for students or groups to use various learning resources. In addition to learning resources, learning media and teaching materials should be easy for students to use and understand to avoid reliance on others during learning (Safitri et al., 2023). To create a conducive learning environment, there are three components: media and teaching aids, equipment and supplies for the learning process, and learning spaces. These three components need to work together synergistically (Avrilianda et al., 2020).

Comics are an attractive medium for primary school students. Comics are a visual medium that can generate interest, cohesion, emphasise the message being conveyed, and develop emotions through the colours used (Safitri et al., 2023). Therefore, comics can be used as an entertaining tool in learning to convey specific messages or information. The messages or information conveyed can be packaged with culture that is closely related to students' daily lives. According to D'Ambrosio (1985), establishing a connection between culture and mathematics is an important step toward ethnomathematics. This field explores various ways of thinking that can produce different types of mathematics. This means that various mathematical ideas can be found and explored within a culture, making that culture a real and relatable source of mathematical learning for students. Ethnomathematics is mathematics practised among identifiable cultural groups. Its identity is highly dependent on areas of interest, motivation, and specific codes and jargon that are not part of the realm of academic mathematics (D'Ambrosio, 1985). Furthermore, Shannon (2021) reminds us that we can expand our knowledge of cultural heritage, so ethnomathematics has a rightful place in mathematics education and contributes to the history of mathematics.

The term 'ethnomathematics' refers to the relationship between culture and mathematics (Fauzi, 2022). he concepts and actions of cultural groups are the subject of ethnomathematics research (Soebagyo et al., 2021). Ethnomathematics helps connect education, culture, and mathematics (Putri, 2017). Education and culture cannot be separated because both are integral parts of human life. However, mathematics is a subject taught in schools and contains abstract concepts that are difficult for students to understand. By using ethnomathematics, teachers can be more concrete in conveying learning messages (Mu'asaroh & Noor, 2021). Students will be able to understand culture and mathematics in mathematics education by using ethnomathematics. This will make it easier for educators to convey cultural values to their students (Soebagyo et al., 2021). Primary school students are increasingly close to the digital world, and information from around the world is increasingly accessible in Indonesia. Issues arise in daily life, and cultural erosion threatens to erode local

cultures. To address future challenges, the role of education is crucial. Contextual learning based on culture and ethnomathematics is one innovation in mathematics education (Nurhayati & Susilo. B.E., 2022).

Ubiratan D'Ambrosio's ethnomathematics theory was used in this study to examine the extent to which local cultural elements were used pedagogically in learning media. On the other hand, Vygotsky's social constructivism theory was used to understand how comic media encourages scaffolding, social interaction, and the development of students' communication and cognition. These two theoretical frameworks served as the basis for reviewing selected articles in the SLR. Specifically, to assess the quality of integration between cultural aspects, narrative visualisation, and mathematical learning objectives in each analysed study.

Research on the development of ethnomathematics comics in the field of mathematics has been conducted by researchers. Arilaksmi's study on Indonesian culture-based mathematics comics states that culture-based comics help students' understanding of mathematical concepts (Arilaksmi et al., 2019). However, there has been little research that comprehensively investigates the use of ethnomathematics comics in primary school mathematics education, especially in recent years. Very few studies combine visual-narrative aspects, cultural context, and cognitive process reinforcement such as communication and mathematical understanding. Due to these limitations, there is a gap in the literature that needs to be filled to understand the extent to which ethnomathematics comics have been used, their characteristics, and their effectiveness in primary education. Additionally, no research has specifically identified this trend over the recent timeframe from 2019 to 2025, which is crucial for observing the latest developments related to curriculum transformation and educational technology.

The 2019–2025 period provides sufficient coverage that is current and relevant to the world of education today. This allows researchers to observe the latest research trends, changes in learning methodologies, and changes in educational policies that impact teaching practices in the field. Selecting this timeframe aligns with the SLR's objective of identifying research gaps and development plans. Researchers can assess the effectiveness of current educational interventions by focusing on publications from 2019–2025 and identify the most suitable models or techniques to apply in the future.

Based on this situation, this study aims to (1) identify research trends related to the use of comic media in mathematics learning in primary schools during the 2019–2025 period, (2) analyse cultural elements and local wisdom integrated into comic media in mathematics learning in primary schools, (3) analyse the effectiveness of using ethnomathematics comic media in mathematics learning in studies from 2019 to 2015.

Research Methods

This study was conducted using the Systematic Literature Review (SLR) method. The SLR method was chosen because it allows researchers to identify, review, evaluate, and interpret the results of previous studies. This approach is considered the most appropriate for mapping research developments, revealing gaps, and providing direction for further research based on existing evidence. In this study, the researchers conducted a structured review of articles following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines, which consist of four main stages: identification, screening, eligibility determination, and verification. The stages in searching for journal articles and proceedings can be seen in Figure 1.

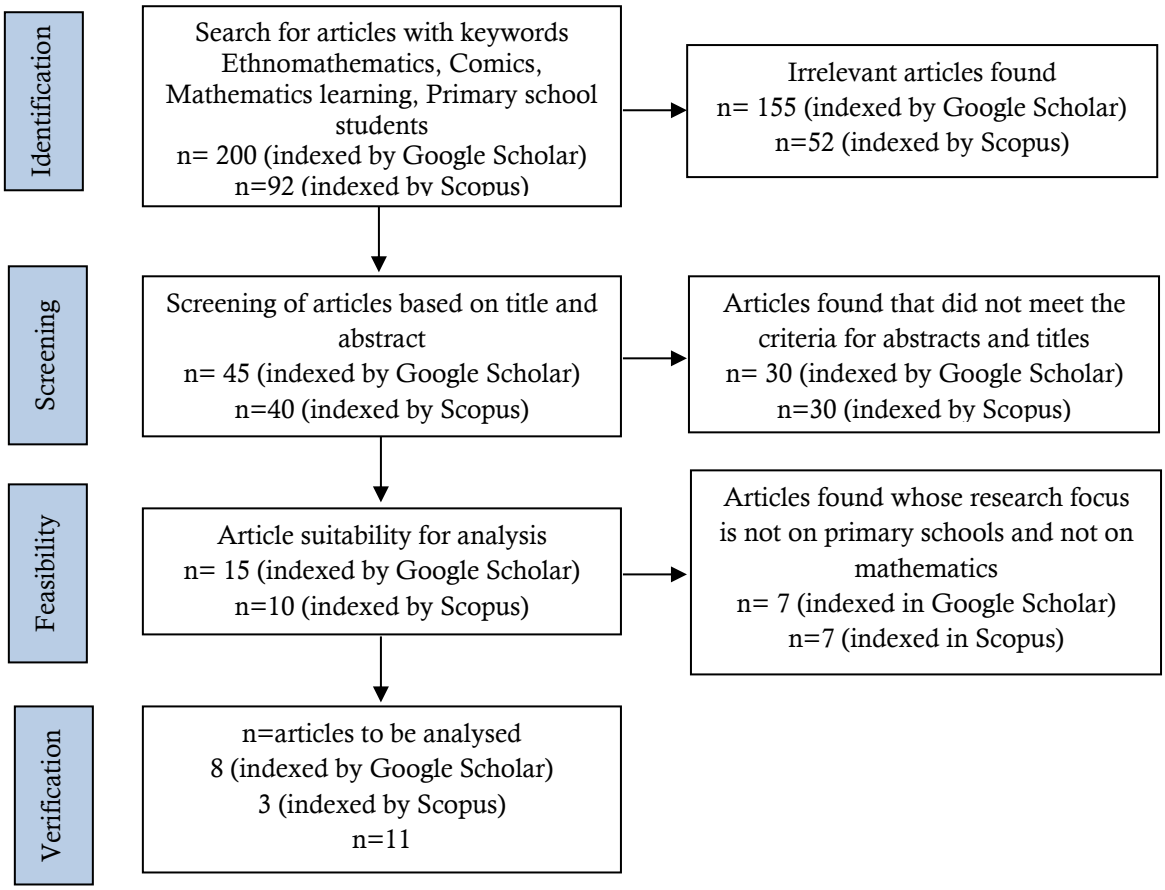

Figure 1. Stages in searching for journal articles and proceedings

Identification in article searches using Publish or Perish (PoP) and VOSviewer software with the keywords Ethnomathematics, Comics, Mathematics Learning, Elementary School Students. The results from VOSviewer show a bibliometric map visualisation, which is a possibility of co-occurrence keywords or terms in literature searches. The following inclusion criteria were used in the screening process: articles published between 2019 and 2025, international or national articles relevant to ethnomathematics comics in mathematics learning at primary schools, international or national articles consistent with the research topic and title, and articles written in Indonesian or English.

The article search process was limited to 200 articles in Indonesian and English published within the last six years, i.e., 2019-2025. The search yielded 200 articles indexed by Google Scholar. A total of 155 articles were eliminated due to their lack of relevance to the keywords used. After screening based on titles and abstracts, 45 articles were obtained. However, 30 articles were found to not meet the criteria as they were part of theses/dissertations and deemed inefficient for analysis. Seven articles were found to have research focuses outside of primary schools. Eight articles were deemed suitable for analysis based on full-text screening.

The researcher also used a search through Scopus, which yielded 92 articles. The articles were then eliminated because they were deemed irrelevant to the keywords 'comics' and 'ethnomathematics,' resulting in 52 articles being excluded. After screening based on titles and abstracts, 40 articles from Scopus were obtained. Subsequently, 30 articles were found to not meet the criteria because they were part of theses/dissertations and were deemed inefficient for analysis. Seven articles were found whose research focus was not on mathematics and were not focused on primary schools. One article and two proceedings from Scopus were

deemed suitable for analysis based on full-text screening. The final articles to be analysed were nine articles and two proceedings that aligned with the research on ethnomathematics comics in primary schools.

The selected articles, 9 articles and 2 proceedings, underwent data extraction using an extraction form designed to record information on publication year, title and author names, research objectives and focus, study type (qualitative, quantitative, R&D, etc.), data collection methods, cultural elements used, comic media type, research findings, study limitations, and contributions to primary school mathematics learning. The analysis was conducted descriptively and thematically based on the above data categories to identify trends, patterns, and research gaps.

Results and Discussion

Based on the data obtained, there were 9 articles and 2 proceedings relevant to the keywords used. Next, the researchers reviewed articles and proceedings relevant to ethnomathematics comics in elementary school learning. The data from these articles and proceedings are documented as shown in Table 1.

Table 1. Research Results Related to Ethnomathematics Comic Media in Mathematics Learning

Source	Author, Year	Journal/Proceedings	Findings
Google Scholar	(Ningrum et al., 2024)	SCIENCE: Jurnal Inovasi Pendidikan Matematika dan IPA	This study shows that the development of digital comic learning media based on Jaranan dance ethnomathematics on flat building material for grade IV SD is very valid and feasible to use.
Google Scholar	(Kartika & Sujarwo, 2022)	Jurnal Penelitian Pendidikan MIPA	The results showed that digital comic learning media products with Javanese cultural nuances related to geometry material were included in the 'very feasible' category based on the results of validation from material experts and media experts as well as primary school learning practitioners.
Google Scholar	(Sastrawati et al., 2025)	Jurnal Eduscience (JES)	It shows that the PBL-based comic media developed is feasible and effective in supporting mathematics learning. Incorporating Jambi cultural illustrations proved beneficial in improving student engagement, motivation, and understanding of mathematics concepts.
Google Scholar	(Kristina et al., 2023)	Judikdas Borneo Jurnal Pendidikan Dasar Borneo	The results of the analysis test show that ethnomathematics comics are effective enough to improve grade IV students' understanding of the concepts of multiplication and division.
Google Scholar	(Safika & Sukmawarti, 2023)	Jurnal Inovasi Penelitian	Research on the development of ethnomathematics-based comic media focusing on geometry material in grade IV SD, which was developed 'Very Feasible' for use in learning mathematics.
Google Scholar	(Oktavia et al., 2025)	Union: Jurnal Ilmiah Pendidikan Matematika	It shows that the ethnomathematics comic developed based on Al-Akbar Mosque is effective and suitable for elementary school students in learning about geometric structures.
Google Scholar	(Ayuni et al., 2023)	Jurnal Media dan Teknologi Pendidikan	The digital comic media for mathematics based on jejaitan local wisdom is valid, practical, and effective for use in learning to improve learning outcomes of fourth grade students.
Google Scholar	(Arliani & Khabibah,	Jurnal Ilmiah Pendidikan	The digital comic media developed meets the requirements of validity, practicality, and

	2022)	Matematika	effectiveness, the digital comics developed can be used in mathematics learning activities. It is hoped that educators can use this media as a learning tool to increase student enthusiasm and improve their learning outcomes.
Scopus	(Arilaksmi et al., 2019)	AIP Conference Proceedings	Showing the results of the research that has been done, the developed mathematics comics with Indonesian cultural backgrounds are valid, practical, and effective in mathematics learning.
Scopus	(Pramulia et al., 2025)	Multidisciplinary Science Journal	There was a significant improvement in the numeracy literacy of students who were taught using Augmented reality comics Ethnomathematics of Al Akbar Mosque Surabaya.
Scopus	(Ahmadi & Iswara, 2024)	AIP Conference Proceedings	Exploring forms of ethnomathematics through electronic comics developed based on the independent curriculum. The e-comic can also be used to introduce students to the culture of Semarang through mathematics so that students are interested in learning mathematics and can strengthen students' numeracy literacy.

The trend of using ethnomathematics comic media in mathematics learning includes the distribution of publication years, the types of comic media used, and the mathematical material or skills in the research. Based on the data obtained from articles and proceedings, the publication years of research on the use of comic media in mathematics learning in the 2019-2025 period can be seen in Table 2.

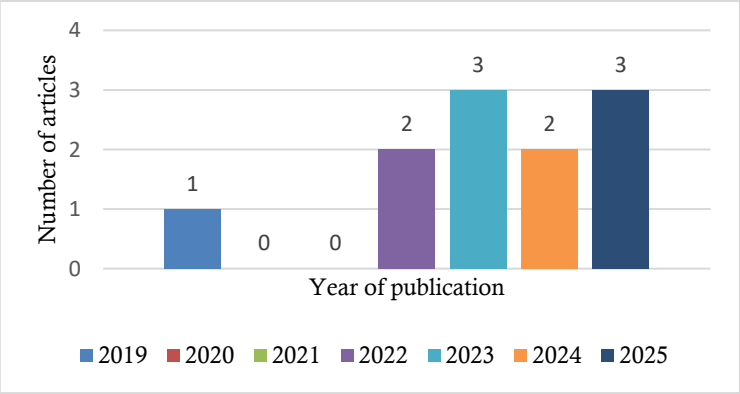

Figure 2. Diagram of Year of Publication

Figure 2 shows the distribution of the number of articles selected in the literature review based on the year of publication. Articles relevant to this research topic are spread across the years 2019 to 2025. In 2019, only one article met the research criteria. However, in 2020 and 2021, no relevant articles were found. This indicates that researchers have not given much attention or published much on the research topic of ethnomathematics comic media in primary school mathematics education during those two years.

Starting in 2022, the number of publications increased. There were two articles in 2022 and 2024, and this trend continued in 2023 and 2025. This pattern indicates that the research topic has received greater attention in recent years. The number of publications published in the last four years shows that researchers are interested in ethnomathematics-based comic learning media research. This is because learning media is an effective tool for improving students' critical thinking skills (Dewi et al., 2025). Media plays an important role in learning

as it serves as a bridge between the recipient of the message and its source. This is crucial for stimulating students' thoughts, feelings, attention, and desire to actively participate in the learning process.

Overall, the distribution of publications shows that this research topic is relevant and still developing, especially in the context of primary education. These results demonstrate the importance of expanding current research and continuing to develop it. Figure 2 below shows the percentage of comic media use in mathematics learning in the period 2019-2025.

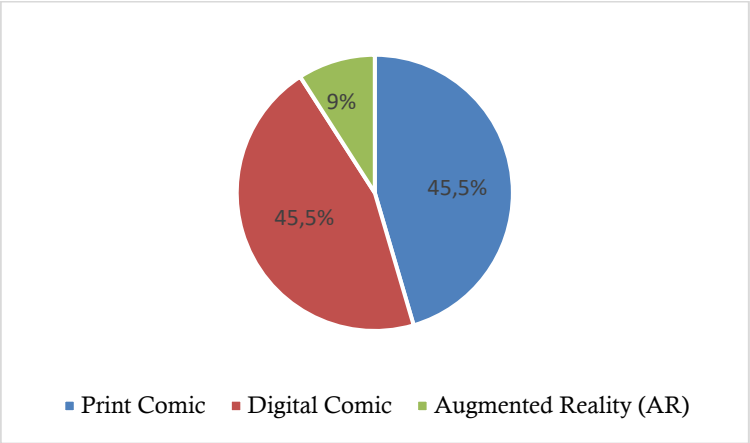

Figure 2. Percentage of Comic Media Types Used in Maths Learning

The types of comic media used in mathematics learning are spread from 2019 to 2025, as shown in Figure 2. The data shows that digital and print comic media were used more in five studies, or about 45.5% of the total eleven studies reviewed. This indicates that the use of digital technology in comic media is becoming increasingly popular, as evidenced by advances in digital devices that enable the integration of images, text, and interactivity in mathematics learning. Printed comics still play a significant role, being used in five studies (45.5%). This type of media remains relevant because it is easy to use and does not require electronic devices, making it suitable for use in primary schools with limited technology.

Although Augmented Reality (AR)-based comics have only emerged in one study (9%), the use of AR technology in comic media shows new innovations that may help students learn better through more engaging learning experiences. Overall, this data indicates that the use of comic media in mathematics learning, both in conventional and digital formats, continues to evolve. It has great potential to increase student engagement and their understanding of mathematical concepts. Table 2 shows the trends in materials or skills that were improved in studies on the use of comic media in mathematics learning from 2019 to 2025.

Table 2. Mathematical Materials or Abilities in Ethnomathematics Comic Media

Author	Mathematical Content/Abilities
(Ningrum et al., 2024)	Flat Buildings
(Kartika & Sujarwo, 2022)	Geometry
(Sastrawati et al., 2025)	Problem Solving
(Kristina et al., 2023)	Multiplication and Division
(Safika & Sukmawarti, 2023)	Geometry
(Oktavia et al., 2025)	Geometry
(Ayuni et al., 2023)	Angles
(Arliani & Khabibah, 2022)	Conversion of Units of Weight
(Arilaksmi et al., 2019)	Comparison
(Pramulia et al., 2025)	Numeracy Literacy
(Ahmadi & Iswara, 2024)	Numeracy Literacy

Table 2 shows the various mathematical materials and skills used in comic media. Based on 11 studies analysed, there is an effort to facilitate the understanding of mathematical concepts through a culturally-based contextual approach. Geometry is the most frequently appearing material in the development of ethnomathematics comic media, discussed in three studies: Kartika & Sujarwo (2022), Safika & Sukmawarti (2023), dan Oktavia et al. (2025). The dominance of geometry content is relevant because geometry has many connections with local cultural elements, such as batik patterns, weaving, and traditional spatial structures, making the dominance of geometry content highly relevant. Thus, it is ideal for use in ethnomathematics comics.

Additionally, there are other interesting variations of content such as Plane Figures, Angles, Multiplication and Division, Weight Unit Conversion, and Ratios, each addressed in 1 study. These variations indicate that ethnomathematics comics can be applied to arithmetic and measurement content related to students' daily lives. There are studies that use ethnomathematics comics to improve numeracy literacy skills (2 studi: Pramulia et al., 2025;Ahmadi & Iswara, 2024). This shows that comics are used not only to convey material but also to improve students' mathematical abilities.

Fascinatingly, Sastrawati et al. (2025) research connects comics to problem-based learning (PBL) strategies. This study demonstrates how comic media can be used into problem-based learning paradigms to promote contextual problem-solving. Overall, this data shows that the content and skills that are being developed in ethnomathematics comic media are rather varied. This variety bolsters comics' potential as a tool to improve primary school students' contextual mathematics problem-solving abilities, numeracy literacy, and conceptual understanding.

Based on 9 articles and 2 proceedings, there are ethnomathematics elements integrated in comic media which can be seen in table 3.

Table 3. Ethnomathematics elements integrated in Comic Media

Author	Elements of Ethnomathematics
(Ningrum et al., 2024)	Kediri Jaranan Dance
(Kartika & Sujarwo, 2022)	Javanese Culture
(Sastrawati et al., 2025)	Jambi Culture
(Kristina et al., 2023)	Dakon Traditional Game
(Safika & Sukmawarti, 2023)	Toba Batak Culture
(Oktavia et al., 2025)	Al-Akbar Mosque Surabaya
(Ayuni et al., 2023)	Jejaitan Local Wisdom
(Arliani & Khabibah, 2022)	Mojokerto Culture
(Arilaksmi et al., 2019)	Roro Jonggrang
(Pramulia et al., 2025)	Al-Akbar Mosque Surabaya
(Ahmadi & Iswara, 2024)	Lawang Sewu Building, Semarang
	Batik and Warak ngendog

Table 3 presents the ethnomathematics elements integrated in the development of comic media in the research reviewed in this study. Based on the review of 9 articles and 2 proceedings, it was found that various elements of local culture were utilised as contexts in the development of comic media for learning mathematics. Various cultural riches of the archipelago, ranging from traditions, traditional games, to historical buildings, are the most widely raised cultural subjects. For example, Ningrum et al. (2024) integrates elements of Kediri Jaranan Dance in the developed comics, whereas Kartika & Sujarwo (2022) utilising the context of Javanese Culture in general. Sastrawati et al. (2025) promoting Jambi culture,

while Kristina et al. (2023) utilising the traditional Dakon game as a way to convey mathematical concepts.

Other research also utilises the richness of location-based cultures, such as the Toba Batak Culture (Safika & Sukmawarti, 2023), Mojokerto Culture (Arliani & Khabibah, 2022), and Jejaitan's Local Wisdom (Ayuni et al., 2023). In addition, some studies use historical buildings as an ethnomathematics context, such as Surabaya's Al-Akbar Mosque (Oktavia et al., 2025; Pramulia et al., 2025), as well as the Lawang Sewu Building, Semarang Batik and Warak Ngendog (Ahmadi & Iswara, 2024).

The study's findings suggest that the creation of comic books for math education skillfully incorporates aspects of regional culture. Generally speaking, three primary types of cultural aspects are employed: traditional games, historical structures and local architecture, and local customs and arts. The use of ethnomathematical principles in comics has multiple focuses, including characters, settings, plots, and contextual issues, in addition to having various ethnomathematical features.

According to D'Ambrosio's conceptual framework, culture in this instance not only provides the story's background but also acts as the cognitive framework within which pupils interpret mathematical ideas. By relating them to well-known life situations, stories and cultural symbols help pupils better understand. Additionally, this improves their conceptual knowledge. The numerous ethnomathematics components in comics show how effective they may be at teaching kids about mathematics in a culturally and contextually relevant way. By including these regional cultural components, it is intended that students will feel more connected to the course material and that regional culture will be preserved.

These results suggest that using comic books that incorporate regional cultural aspects into their content offers elementary school pupils a more interesting and relatable way to study. This is consistent with the ethnomathematics theory of D'Ambrosio (1985) which holds that mathematics is not only universal but also develops within particular cultural contexts and becomes ingrained in everyday communal activities. Additionally, Vygotsky's concept of scaffolding through tangible social and symbolic connections is supported by comics as a visual-narrative medium. Therefore, the study's findings support the idea that ethnomathematics comics serve as a bridge between formal mathematical ideas and cultural knowledge in addition to being a useful tool.

Several studies in the 2019-2025 period have examined the effectiveness of ethnomathematics comic media in learning mathematics. In development research (R&D), how effective this media is on mathematics problem-solving skills was investigated by Kartika & Sujarwo (2022). The results showed that the experimental class had better problem solving skills with an N-Gain value of 0.68 and an N-Gain value of 0.42, each included in the medium category. However, the experimental class had better learning outcomes than the control class. Next, Kristina et al. (2023) conducted quantitative research with a Pretest-Posttest One Group design to examine the effectiveness of ethnomathematics comic media on understanding the concepts of multiplication and division. The results showed an N-Gain of 59.99%, which indicates that this media is quite effective and has an influence on increasing understanding of the concepts of multiplication and division.

Research by Ayuni et al. (2023) used an R&D approach to develop digital comic media for mathematics in angle material. The effectiveness test results show that this media is effective in improving learning outcomes. Based on the results of the one-sample t-test analysis, a significance value of 0.000 ($p < 0.05$) was obtained, which showed a significant difference between the pretest and posttest. Furthermore, Pramulia et al. (2025) also used an

R&D approach to examine the effectiveness of ethnomathematics comic media in improving numeracy literacy. The results of the pretest and posttest analysis showed an increase seen from the N-Gain value of 0.71, categorised in the high improvement category.

A study of multiple studies conducted between 2019 and 2025 indicates that ethnomathematics comic media can effectively enhance primary school mathematics instruction. Numerous facets of students' mathematical skills, including problem-solving skills, concept comprehension, learning outcomes, and numeracy literacy, regularly demonstrate notable gains when this material is used. This media's effectiveness is further supported by the results, which showed that the N-Gain values fell between the medium and high categories and had a significant statistical test ($p < 0.05$). Therefore, ethnomathematics comic media can be regarded as a creative and relevant substitute to raise the standard of mathematics instruction at the elementary school level.

Although this study shows that the trend of ethnomathematics comic research in primary school mathematics education is developing positively and is relevant, there are several limitations that must be considered. First, the scope of the database used is limited to Google Scholar and Scopus, so articles from other sources that are also relevant may not be included. Second, the articles analysed are limited to two languages (Indonesian and English), so the potential research results from other regions or languages are not filtered in this study. Third, since publications tend to have significant results, interpreting the strength of evidence must be done cautiously because the articles were published with a tendency to produce significant results.

Based on the results of the study, several suggested research directions are the development of ethnomathematics comics based on cultures from Eastern Indonesia or underrepresented minorities; the integration of comics with digital technology, such as Augmented Reality (AR) or Virtual Reality (VR), to create a more interactive learning experience; linking ethnomathematics comics with learning approaches/strategies/methods to maximise improvements in students' mathematical abilities; Longitudinal research to assess the long-term impact of using ethnomathematics comics on students' mathematical abilities.

Conclusion

As a conclusion from the literature review of 9 articles and 2 proceedings published between 2019 and 2025, it can be concluded that the relationship between the distribution of publication years and trends in the use of ethnomathematics comic media in mathematics education remains relevant and evolving, particularly in primary education. These findings theoretically support the position of ethnomathematics theory D'Ambrosio as a relevant conceptual framework for culture-based mathematics education. Comics serve as an effective tool for connecting local knowledge with formal mathematical concepts. This aids in the design of contextual learning media that is closer to students' lived experiences. Furthermore, the cultural elements most frequently used in research on ethnomathematics comics originate from the diverse cultural riches of the Nusantara region. These elements are categorised into three main categories: local traditions and arts, traditional games, historical buildings, and local architecture. Research has shown that ethnomathematics comics function as an effective tool to help students learn mathematics in primary schools. The contribution of this study is also strategic for the development of culture-based curriculum policies, particularly in providing references and empirical foundations for the development of learning media that are appropriate to the regional context. However, the limitations of this study in terms of cultural representation (dominated by Java and Sumatra), as well as limitations in data and language,

highlight the importance of further research that is more geographically extensive and methodologically rigorous.

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