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Enhancing Mathematical Understanding Through Ethnomathematics: A Study Of The Pusaka Monument's Geometric Structures

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Abstrak:

Telah ada beberapa penelitian terdahulu yang mengkaji eksplorasi etnomatematika pada situs budaya. Namun, belum ada hasil penelitian yang mengeksplorasi secara spesifik Tugu Pusaka. Penelitian ini bertujuan untuk mengeksplorasi konsep-konsep etnomatematika yang terkandung dalam Tugu Pusaka Selogiri di Kabupaten Wonogiri, Jawa Tengah. Sebagai monumen bersejarah yang menyimpan tiga pusaka peninggalan Pangeran Samber Nyawa, Tugu Pusaka menawarkan banyak aspek matematis yang dapat diintegrasikan dalam pembelajaran. Metode penelitian yang digunakan adalah survei dengan pendekatan etnografi, melibatkan observasi, wawancara, dan dokumentasi untuk mengumpulkan data. Data dianalisis secara deskriptif kualitatif untuk mengidentifikasi dan mengklasifikasikan bentuk-bentuk etnomatematika, khususnya dalam domain geometri. Hasil penelitian menunjukkan bahwa Tugu Pusaka Selogiri mengandung berbagai konsep bangun datar dan bangun ruang seperti trapesium, jajargenjang, segi delapan, balok, dan tabung. Identifikasi dan analisis konsep-konsep ini memberikan wawasan baru tentang bagaimana struktur geometris tugu dapat digunakan sebagai media pembelajaran matematika yang kontekstual dan berbasis budaya. Temuan ini mendukung pentingnya mengintegrasikan nilai-nilai budaya dalam pendidikan matematika untuk meningkatkan pemahaman siswa sekaligus melestarikan warisan budaya lokal. Penelitian ini memberikan kontribusi signifikan dalam pengembangan metode pembelajaran berbasis etnomatematika dan diharapkan dapat diimplementasikan pengembangan soal.

Kata Kunci: Etnomatematika, Konsep Matematika, Tugu Pusaka Selogiri, Warisan Budaya

Abstract:

Several previous studies have examined the ethnomathematical exploration of cultural sites. However, there has been no research specifically exploring the Tugu Pusaka. This study explores the ethnomathematics found in the Pusaka Monument in Selogiri, Wonogiri Regency. Ethnomathematics examines how cultural groups understand and use mathematical concepts. The Pusaka Monument, with its geometric structure, offers numerous aspects for study within this context. The objective of this research is to describe the mathematical concepts present in the Pusaka Monument and to integrate these concepts into mathematics education. The research employs a survey method conducted at the Pusaka Monument site, with purposive sampling to ensure relevance and significance. The study follows a series of steps: literature review, field data collection, and descriptive and factual analysis of findings. Data collection involved observation, interviews, and documentation. The data were analyzed qualitatively, focusing on identifying geometric concepts within the monument's structure. This research aims to enhance students' understanding of mathematics through the integration of cultural elements and to promote the preservation of Indonesia's cultural heritage through ethnomathematics. The findings are expected to contribute to the development of a more contextual and culturally-based mathematics problems.

Keywords: *Ethnomatematika, Mathematics Education, Pusaka Monument Selogiri, Cultural Heritagez*

1. INTRODUCTION

Indonesia has a rich cultural past, with each region having distinct cultural elements that add to its distinctiveness (Setiana *et al.*, 2021). Future generations must maintain this cultural heritage to ensure its continuity and the wisdom values contained within it are not lost (Febriana *et al.*, 2022). Education and culture are two inseparable entities (Ni'mah and Marlina, 2021; Febriana *et al.*, 2022). Monuments, temples, mosques, pagodas, cathedrals, shrines, residential residences, and other structures can all be used to reflect cultural values (Zayyadi, 2017). One of the buildings that will be discussed in this study is the Pusaka Monument in Wonogiri, Central Java.

The Pusaka Monument was constructed to house and preserve three heirlooms of Raden Mas Said, also known as Prince Samber Nyawa, the creator of the Wonogiri district. This monument stands since 1935 during the reign of Mangkunegaran VII and bears three heirloom spears: the Keris Duwung Kyai Karaweleng, Tombak Kyai Totog, and Tombak Kyai Jaladara (Baladewa) (*Solopos Soloraya*, 2017).

Given the significance of the Pusaka Monument, an investigation including mathematical principles is required. One effort that might be undertaken is to introduce students to the Pusaka Monument early on through their disciplines. Mathematics may be used as an effective medium to introduce this culture. Exploring mathematical principles within the culture of the Pusaka Monument is important because it can help students grasp mathematical concepts while also introducing them to the Pusaka Monument's culture.

The pusaka monument

The Pusaka Monument Selogiri is located in Selogiri District, Wonogiri Regency, Central Java. This monument was built to store and preserve three heirlooms of Raden Mas Said or Prince Samber Nyawa, which consist of two spears (Kyai Totog and Kyai Jaladara/Baladewa) and one keris (Kyai Karawelang)(*Solopos Soloraya*, 2017).

Figure 1. The Pusaka Monument Selogiri

The Pusaka Monument Selogiri was built in 1935 during the reign of Mangkunegaran VII. The heirlooms stored within this monument were weapons used by Prince Samber Nyawa in his struggle against Dutch colonizers in the 18th century. Every Sura (Muharam) month, these heirlooms are ceremonially cleansed in a ritual performed by officials from Mangkunegaran (*Wonogiri TIC*, 2024).

The Pusaka Monument Selogiri, constructed in 1935 by Mangkunegara VII, honors Raden Mas Said (Mangkunegara I) and his contributions to establishing the Mangkunegaran

principality. It houses three sacred heirlooms: Keris Kyai Karawelang, Tombak Kyai Totog, and Tombak Kyai Jaladara, which are central to its historical significance. These heirlooms are used in annual Sura rituals, highlighting their ongoing cultural importance (*Wonogiri TIC*, 2024)..

Architecturally, the monument resembles the ancient Sukuh Temple, integrating elements of Javanese culture and history. Unique features such as "sengkalan memet," symbolic inscriptions that narrate historical events, enhance its aesthetic and historical value. This design choice reflects Mangkunegara VII's dedication to preserving Javanese heritage and honoring the region's past (*Wonogiri TIC*, 2024)..

Overall, the Pusaka Monument Selogiri stands as a profound symbol of cultural identity and historical remembrance for the local community. It not only commemorates the struggles and achievements of Mangkunegara I but also serves as a testament to the ongoing commitment to cultural preservation. The monument is a source of pride and a tangible link to the rich history and traditions of Javanese culture.

Efforts to preserve the pusaka monument

Efforts to preserve the Pusaka Monument Selogiri involve both cultural practices and community engagement. The annual Sura ritual, where the sacred heirlooms are cleansed, helps maintain their physical condition and cultural relevance. Additionally, local cultural and historical societies organize events and educational programs to raise awareness about the monument's significance, fostering a sense of pride and responsibility among the younger generationThe Pusaka Monument Selogiri holds significant cultural value as it symbolizes historical struggle and serves as a means to maintain tradition and local wisdom. Preservation efforts through regular cleansing rituals and cultural introduction to younger generations are crucial. Through education, particularly by integrating mathematical concepts related to this monument, cultural values can be more easily understood and passed down to future generations (*Wonogiri TIC*, 2024). Namun demikian, pengenalan terkait monumen tersebut perlu ditingkatkan sebagai sebuah upaya preservasi budaya. Salah satu upaya yang dapat dilakukan adalah dengan memperkenalkan monumen tersebut sedini mungkin kepada peserta didik di sekolah melalui pembelajaran matematika.

Mathematics involves the study of geometric shapes like triangles, squares, blocks, cubes, cylinders, and others. These shapes are integral to the components of the Selogiri Heritage Monument. Consequently, integrating mathematics education to introduce the monument is highly relevant. To initiate this, efforts can be made to explore and highlight mathematical concepts present in the Selogiri Heritage Monument as an effort to preserve the monument. In context, mathematics is a study that studies geometric shapes such as triangles, squares, blocks, cubes, cylinders, and so on. These geometric shapes are very closely related to the components contained in the Selogiri Heritage Monument. Therefore, using mathematics learning as an effort to introduce the monument becomes relevant to do. So to start that, efforts to explore mathematical concepts at the Selogiri Heritage Monument can be carried out.

Ethnomathematics

Ethnomathematics is the study of the relationship between mathematics and culture, exploring how mathematical concepts and practices are integrated into the cultural traditions and daily life of various communities (Gerdes, 1994). In ethnomathematics, students are not only encouraged to develop their mathematical skills but are also introduced to their culture (Febriana *et al.*, 2022). In other literature, ethnomathematics is defined as the concept that

mathematics can be explored and found within culture, further clarifying the connection between culture and mathematics (Setiana *et al.*, 2021; Rahman *et al.*, 2022). Therefore, ethnomathematics studies the relationship between culture and mathematics or mathematics education.

In the context of the study, ethnomathematics helps the authors to examine how specific cultural groups understand and use mathematical concepts (Ascher, 1991), especially for The Pusaka Monument Selogiri. The monument, with its geometrical structure, offers many aspects for study within ethnomathematics. For example, the monument's shape, the layout of the heirlooms, and its architectural design can be analyzed using geometric concepts such as symmetry, proportion, and volume. The Pusaka Monument can be studied for its symmetry and proportions used in its design. The monument's shape, possibly a prism or cylinder, can be subjects for calculating volume and surface area. Moreover, the heirlooms' layout within the monument can provide insight into spatial distribution and geometric balance.

Integrating ethnomathematics in the study of the Pusaka Monument Selogiri not only helps students better understand mathematical concepts but also introduces them to local cultural and historical values. For example, by calculating the distance and positions of the heirlooms within the monument, students can learn basic mathematical concepts while understanding the heirlooms' cultural and historical importance.

Research Gap and Objectives

Ethnomathematics involves studying how mathematical concepts are integrated and applied in various cultures. Research on ethnomathematics in Indonesia has shown various ways communities apply mathematical concepts in daily life, especially within cultural and historical contexts. Previous studies illustrate the application of mathematical concepts in various cultural artifacts and buildings in Indonesia. (Sartika *et al.*, 2023) researched planar shapes applied to artifacts in the Sumba Cultural House museum, revealing that these artifacts contain many mathematical elements. Studies by (Revanny, Fauziyah and Mariana, 2022) and (Zaenuri and Dwidayati, 2018) showed that planar shapes found in the Balai Pemuda Surabaya cultural heritage can be applied in elementary school mathematics lessons in line with the 2013 curriculum. Observations by (Mufidatunnisa and Hidayati, 2022) discovered mathematical concepts in planar shapes around the PETA Monument and Museum. Moreover, research by (Jatia, Mastur and Asikin, 2019) identified planar shape concepts in the Waseso Monument, Sojiwan Temple, and Plaosan Temple.

However, despite numerous studies exploring mathematical concepts in culture, no research has yet explored the mathematical concepts in the Pusaka Monument, a monument with significant cultural value in Selogiri, Wonogiri. This monument, established in 1935 during the reign of Mangkunegaran X, serves to store and maintain three heirlooms: the keris Duwung Kyai Karaweleng, Tombak Kyai Totog, and Tombak Kyai Jaladara (Baladewa).

Exploratory research on ethnomathematics in monument structures is still limited, including the Pusaka Monument Selogiri. Therefore, a study on the mathematical concepts contained within this monument is necessary to preserve Indonesian culture. Previous studies identified mathematical concepts mainly related to geometry, with various planar and spatial shapes found.

Developing ethnomathematics-based learning can begin by identifying interesting and relevant ethnomathematics objects, such as the Pusaka Monument Selogiri. This monument not only holds historical and cultural value but also has great potential for integrating mathematical concepts into education. Ethnomathematical values in the Pusaka Monument include cultural elements in mathematics learning, both in lesson planning and instructional

processes. These cultural elements can be blended with mathematical concepts, particularly in geometry.

Thus, this research aims to describe the process of exploring mathematical concepts in the Pusaka Monument and the mathematical concepts contained within it. This study is expected to significantly contribute to developing more contextual and culturally based mathematics education and preserving Indonesian cultural heritage through an ethnomathematics approach.

2. *RESEARCH METHOD*

This research uses a survey method conducted at the Pusaka Monument Selogiri cultural site in Wonogiri Regency. The location and subjects of the study were purposively chosen to ensure relevance and significance to the research objectives. The survey method involves several stages: literature review, field data collection, and description and analysis of field findings using a factual model.

This research involves several stages: literature review, field data collection, and description and analysis of field findings. The literature review stage involves reviewing various literature sources related to ethnomathematics, mathematical concepts in culture, and previous studies relevant to the Pusaka Monument Selogiri. The reviewed literature includes books, journals, articles, and other documents related to ethnomathematics and the cultural site. Field data collection was conducted using three main techniques: observation, interviews, and documentation. The collected data were analyzed descriptively and qualitatively. This analysis involves detailing the results of observations, interviews, and documentation. Findings are organized into categories relevant to geometric concepts. Then, the identified and classified forms of ethnomathematics found in the Pusaka Monument Selogiri. This analysis helps connect findings with existing mathematical theories and concepts in the literature.

This research uses an ethnographic approach to explore the community's culture through exploration, documentation, literature review, and observation. This approach follows the main questions that need to be answered (Prahmana and D'Ambrosio, 2020): "Where do I start looking?", "How do I find it?", "How do I recognize that I have found something significant?", "How do I understand what it is?". Therefore, the research design is based on these four questions (see Table 1).

Table 1. Research Design

Principal Question	Initial Answer	Specific Point	Specific Activity
Where do I start looking?	Research begins by focusing on the Pusaka Monument Selogiri, known for its rich cultural and historical value.	Culture and History	Conducting interviews with individuals knowledgeable about the Pusaka Monument
How do I find it?	Through a combination of observation, interviews, and documentation techniques, researchers gather relevant data.	Alternative Thoughts	Determining the mathematical concepts contained in the Pusaka Monument
How do I recognized that it has found something significant?	The significance of findings is determined based on their alignment with ethnomathematics concepts, particularly in geometry.	Mathematical Philosophy	Identifying the mathematical concepts present in the Pusaka Monument

Principal Question	Initial Answer	Specific Point	Specific Activity
How to understand what it is?	Collected data are analyzed and interpreted to understand the mathematical concepts contained in the Pusaka Monument Selogiri.	Anthropological Methodology	Explaining the relationship between the cultural system and mathematics

The data collection process was carried out from March 23, 2024, to May 30, 2024, in various locations and through literature. The object of this research is the mathematical concepts found in the Tugu Pusaka Selogiri. The subject of this research is the Tugu Pusaka Selogiri itself. The concepts studied are based on four prominent branches of mathematics: geometry, algebra, arithmetic, and statistics.

Data collected includes the results of observations of the object, theoretical data from literature studies, and photos from documentation. This data is used to identify mathematical concepts in the Pusaka Monument Selogiri. Once the data is obtained, analysis is conducted to gain a general understanding of the mathematical ideas. This analysis involves grouping mathematical concepts according to ethnomathematics domains, particularly geometry. Detailed taxonomic analysis is chosen based on the geometric concepts found in the parts of the Pusaka Monument Selogiri. Using this method and approach, the research aims to explore and describe the ethnomathematical values found in the Pusaka Monument Selogiri and their potential integration into mathematics education.

3. *RESULTS AND DISCUSSION*

Result

Where do I start looking?

This research begins by investigating how the Pusaka Monument, located in Nglaroh Village, Selogiri District, was built. The authors then conducted interviews with the officials of the Association of Mangkunegaran Suryasumirat (HKMNS). The Pusaka Monument Selogiri is a monument located in the Selogiri District, Wonogiri Regency, Central Java. This monument was erected to store and preserve three heirlooms of Raden Mas Said or Prince Samber Nyawa, consisting of two spears (Kyai Totog and Kyai Jaladara/Baladewa) and one keris (Kyai Karawelang). The Pusaka Monument Selogiri was built in 1935 during the reign of Mangkunegaran VII. The heirlooms stored in this monument are weapons used by Prince Samber Nyawa in his struggle against the Dutch colonizers in the 18th century. Every month of Sura (Muharram), these heirlooms are cleaned during a ceremony conducted by officials from Mangkunegaran. The Pusaka Monument Selogiri holds high cultural value not only as a symbol of historical struggle but also as a means of preserving tradition and local wisdom. Preservation efforts through regular cleaning ceremonies and the introduction of this culture to the younger generation are crucial. Through education, especially by integrating mathematical concepts related to this monument, cultural values can be more easily understood and passed down to future generations.

How do I find it?

Ethnomathematics possessed or developed in society includes cultural heritage such as temples and inscriptions, pottery and traditional tools, local entities, batik and embroidery motifs, traditional games, and community settlement patterns, which are the results of various

mathematical activities (Zayyadi, 2017). The Pusaka Monument is often used as an icon of the Selogiri District in Wonogiri Regency, located at the Kaliancar Selogiri crossroads.

Figure 2. Pusaka Monument

In this study, authors conducted an in-depth observation of various elements within the Tugu Pusaka Selogiri. The primary focus was to identify and understand the mathematical concepts embedded in the Tugu Pusaka Selogiri. Each side of the structure was meticulously analyzed to uncover its intrinsic relationship with mathematical principles.

Subsequently, authors examined how these patterns correspond to predetermined mathematical concepts. This analysis involved mapping the elements of the Tugu Pusaka to mathematical concepts such as symmetry, geometry, numerical patterns, and more. The findings of this analysis are summarized in the Table 2.

Table 2. Analysis of Mathematical Concepts Based on Expert Validation

Concept	Concept Existance	Sub-Consepts	Topic
Geoemetry	Yes	Plane geometry	Isosceles Trapezoid Right-Angled Trapezoid Cylinder Rectangular Prism Parallelogram Irregular Quadrilateral Octagon Rectangle
Algebra	No	-	-
Aritmetic	Yes	-	-
Statistics	No	-	-

How do I recognize that it has found something significant?

Based on the initial analysis conducted on the mathematical concepts as shown in Table 2, only the concept of Geometry was identified out of the four mathematical concepts studied. Furthermore, two sub-concepts within Geometry were found, namely plane geometry and solid geometry. According to the research, plane geometry sub-concepts are found on the front and left sides of the Selogiri Pusaka Monument, which include shapes such as isosceles trapezoids, right-angled trapezoids, parallelograms, irregular quadrilaterals, octagons, and rectangles.

Meanwhile, solid geometry sub-concepts can be found in the lower and upper parts of the structure, including cylindrical and rectangular prism shapes. This identification indicates that the Selogiri Pusaka Monument not only holds high historical and cultural value but also contains mathematical concepts that can be used as teaching material. Thus, this monument can be an effective medium for teaching geometry concepts to students, integrating local cultural values into the mathematics curriculum.

How to understand what it is?

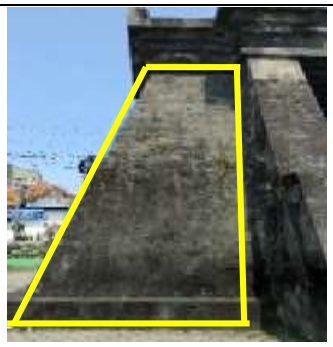
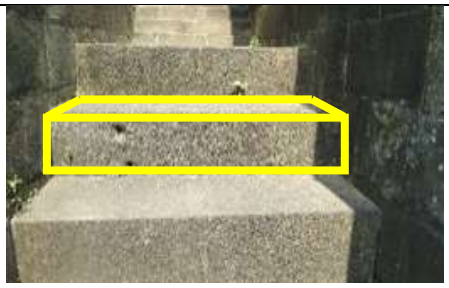
To verify the validity of the data, a data source triangulation process was conducted. This process involved comparing the author's assumptions about the mathematical concepts in the Pusaka Monument, as shown in Table 2, with the views of experts in the field of mathematics. Two key questions were posed to the experts: (1) What are their views on the mathematical concepts in the Pusaka Monument (to ensure they found the same mathematical concepts as the author), and (2) Can the context of the Pusaka Monument be applied in teaching mathematics?

The concept of geometry was the initial concept validated and directly questioned to an expert in the field. In response to the first question, the expert found that the sub-concepts identified were the same as those discovered by the author, namely plane geometry and solid geometry. The sub-concepts of plane geometry include isosceles trapezoid, right-angled trapezoid, parallelogram, irregular quadrilateral, rectangle, and octagon. These sub-concepts are often found in everyday life, including in local products and Indonesian culture. For example, a study conducted by (Zaenuri and Dwidayati, 2018) showed that many historical and modern structures in Indonesia, such as the Great Mosque of Central Java, Blenduk Church, Sam Poo Kong Temple, Lawang Sewu, and Tugu Muda, are rich in ethnomathematical elements, including the use of geometric concepts as mentioned above. Additionally, other research shows that geometric concepts, including rectangles and trapezoid, can be found in traditional crafts such as the Sidoluhur batik motif (Ishartono and Ningtyas, 2021; Ni'mah and Marlina, 2021).

The sub-concepts of solid geometry include cylinders and rectangular prisms, which are also commonly found in everyday life and local Indonesian products and culture. For instance, at the Kraton Yogyakarta Carriage Museum, various solid geometric shapes can be explored through different concepts, such as the volume concept of rectangular prisms (Setiana et al., 2021). The following Table 3 illustrates the concept of area and volume for the Pusaka Monument.

Table 3. Examples of Area Concepts for Plane Figures and Volume Concepts for Solid Figures

Geometric Shape	Artefacts	Concept
Isosceles Trapezoid		The front of the monument forms a trapezoidal concept. In the picture on the side, the right and left sides resemble the foot of the foot in the shape of an isosceles trapezoid. While the top and bottom sides are in the form of two parallel lines where the length of the bottom side is longer than the length of the top side.

Geometric Shape	Artefacts	Concept
Right-Angled Trapezoid		The left wing of the monument also forms a trapezoid, but more specifically the trapezoid of the elbow. As seen in the picture on the side, the right and bottom sides appear perpendicular to each other. While the two sides of the top and bottom are parallel to each other.
Cylinder		At the bottom of the monument, more precisely at the bottom of the monument stairs, there is a structure that resembles a cylinder shape. As seen in the picture on the side, the right side of the structure resembles a circle.
Rectangular Prism		On the side of the staircase on the monument resembles a rectangular prism. This looks like in the picture next to the rectangular side on both the front and top sides.
Parallelogram		On the outside of the monument staircase, there is a relief that has a frame in the shape of a parallelogram. As seen in the image on the side, there are two oblique sides that are parallel to each other, and two horizontal sides that are parallel to each other.

Geometric Shape	Artefacts	Concept
Octagone		On the inside of the Heritage Monument, there is a side that has an irregular-octagone shape as seen in the picture on the side.

According to mathematics experts, the Pusaka Monument can be used as a medium for teaching mathematics. Students can determine the length of plane figures through measured points using number patterns according to the dimensions of the Pusaka Monument, as well as calculate their perimeter and area. Additionally, students can also measure the volume of the solid figures.

Discussion

Based on the results that have been obtained, it can be found that the Selogiri Heritage Monument, in terms of building structure, contains various mathematical concepts such as geometric concepts in the data field including isosceles trapezoids, octagons, right right trapezoids, parallelograms. In addition, the concept of spatial geometry such as cylinders and quadrilateral prisms was also found. Although the Selogiri Heritage Monument is not a type of temple, structurally this monument resembles a temple where one of its features is the use of stone as the basic material of the monument. Therefore, this finding is in line with several previous studies such as the results of research from Irsyad et.al. (2020) which studies the mathematical concept at Asu Temple where based on the observation results found there are concepts of field geometry and space geometry. Next research results from Munthahana and Budiarto (2020) who examined the exploration of mathematical concepts in Panataran Temple, as well as the results of research from Sulistyowati and Khotimah (2022) which explores the concept of mathematics at Sewu Temple in Yogyakarta. The results of the two studies show that there is a geometric concept in the two temples explored in the two studies.

The results of this study can be a reference for teachers in explaining the concept of spatial and field geometry using the context of the Selogiri Heritage Monument. One of the uses of the context is in the creation of geometry questions based on the context of the Selogiri Heritage Monument. One example of the problem is as follows:

> "The Selogiri Heritage Monument has several building structures that are in the form of a parallelogram as part of its architectural design. One of the building structures is the main wall consisting of parallelograms with beveled side lengths AB = 10 meters and BC = 8 meters. The angle formed from the AB and BC sides is 60°. Calculate the area of the main wall of the monument!"

This question is a question that can be given to elementary or high school students who use the C3 cognitive level or application level in the Revised Bloom's Taxonomy (Krathwohl and Anderson, 2010). The question uses the context of the Selogiri Heritage Monument to make it easier for students to understand the concept of parallelograms. There are two things that students get based on the questions, the first is the introduction of the Selogiri Heritage Monument to the students. Next is that students can more easily understand the context of the questions given based on their knowledge at the Selogiri Heritage Monument.

Of course, there are still many aspects that can be improved from this research, namely in other aspects of geometric objects that can be explored from the monument. In addition, it is also in the aspect of mathematical concepts that can be explored further on the monument. Based on these two limitations, the next research can further explore the mathematical concepts contained in the Selogiri Heritage Monument.

4. CONCLUSION

The study of mathematical concepts present in the Pusaka Monument, including perimeter and area of geometric shapes, concludes that these ethnomathematical concepts can be integrated into school mathematics curricula, particularly in teaching geometric shapes. This approach not only makes mathematics learning more effective, interesting, and enjoyable but also enhances students' mathematical skills and understanding of geometry. Observations of the Pusaka Monument show that mathematics can be connected with cultural elements, revealing its cultural significance. The research highlights the potential of using these mathematical concepts to preserve the culture of the Pusaka Monument through education from elementary to secondary levels. Expanding this research to test the effectiveness of Pusaka Monument-based learning in improving students' mathematical understanding could further support cultural preservation efforts.

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