



Ancient sites as ethnomathematics for strengthening Profil Pelajar Pancasila in Malang

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ABSTRACT

This study aims to determine the effectiveness of learning mathematics using ancient sites as a source of learning and to raise students' awareness of protecting and preserving ancient sites. The research design used was the pre and post-test group design with two groups. The experimental and control groups will be given a pretest before treatment and a posttest after treatment. The population used was 148 grade IV elementary school students, and the sample used was 120 people consisting of 60 experimental class students and 60 control class students. Data analysis in this study used statistical data processing software IBM SPSS version 27. Based on the summary of the independent t-test results, the value of Sig. (2-tailed) on the post-test data is <0.001 . This value is smaller than the specified significance level of 0.05. This means that the averages of the experimental and control groups at the post-test were significantly different. The results showed that the archaeological site of Singosari temple can be used as a source of learning mathematics for elementary schools and can increase students' understanding of the preservation of ancient sites as a form of strengthening the Profil Pelajar Pancasila.

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ABSTRAK

Penelitian ini mengungkap keefektifan pembelajaran matematika dengan menggunakan situs purbakala sebagai sumber belajar serta meningkatkan kesadaran siswa untuk menjaga dan melestarikan situs purbakala. Desain penelitian yang digunakan adalah pre and posttest group design dengan dua kelompok. Kelompok eksperimen dan kontrol akan diberikan pretest sebelum perlakuan dan posttest setelah perlakuan design dengan dua kelompok. Kelompok eksperimen dan kontrol akan diberikan pretest sebelum perlakuan dan posttest setelah perlakuan. Populasi yang digunakan sebanyak 148 siswa sekolah dasar kelas IV dan sampel yang digunakan sebanyak 120 orang yang terdiri dari 60 siswa kelas eksperimen dan 60 siswa kelas kontrol. Analisis data pada penelitian ini menggunakan software pengolah data statistik IBM SPSS versi 27. Berdasarkan rangkuman hasil uji t independen diperoleh nilai Sig. (2-tailed) pada data posttest $<0,001$. Nilai ini lebih kecil dari tingkat signifikansi yang ditentukan yaitu 0,05. Artinya rata-rata kelompok eksperimen dan kontrol pada saat posttest berbeda secara signifikan. Hasil penelitian menunjukkan bahwa situs arkeologi Candi Singosari dapat dijadikan sebagai sumber pembelajaran matematika untuk sekolah dasar dan dapat meningkatkan pemahaman siswa terhadap pelestarian situs purbakala sebagai bentuk penguatan profil siswa Pancasila.

Kata Kunci: Ethnomathematic; Profil Pelajar Pancasila; situs purbakala; sumber belajar

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INTRODUCTION

Educational innovations, including learning mathematics, are necessary to make learning more enjoyable. Mathematics is the science of quantity, shape, arrangement, and size. In learning mathematics, what needs to be considered are the methods and processes used in determining an appropriate concept, using consistent symbols, and knowing the nature and relationship between numbers and sizes in absolute and abstract terms. Based on the results of a survey conducted by the Trend in International Mathematics and Science Study (TIMSS) and the Program for International Student Assessment (PISA) it provides information that the ability of Indonesian students is in the lower (low) zone (Anista & Marsigit, 2020; Fenanlampir et al., 2019) so that a varied learning of mathematics is needed. Variable learning is expected to make students active and creative in learning so that they can solve problems that they encounter every day. Not only students but also the teacher acting as an educator needs to present learning resources or bring students directly to learning resources as proof that mathematics subjects can collaborate with something real around students so that it will impact learning outcomes.

Over the past ten years, much ethnomathematics research has been done in Indonesia. Be that as it may, because Indonesia is immense and comprises numerous clans, not all societies have been investigated ethno-mathematically. Ethnomathematics investigation for ethnomathematics-based learning follows the ongoing educational plan in Indonesia, specifically the Merdeka Educational program. The pitch of the autonomous educational program in grade schools is that kids can advance uninhibitedly and cheerfully. Thus, educators should create an excellent learning climate. Hence, youngsters are cheerful and blissful in learning science, remembering involving numerical substance and peculiarities that exist for the way of life of kids learning math. Teachers need sufficient ethnomathematics knowledge regarding the culture that will be utilized in the learning process in order to be able to use mathematical content and phenomena in cultural elements. Therefore, ethnomathematics research must continue, beginning with exploration, creating tools, media, and learning resources based on ethnomathematics, and learning experiments based on ethnomathematics (Rahmadani, 2023).

Aside from the numerical substance, investigation, and improvement should be coordinated towards the course of social change so neighborhood astuteness, which is brimming with information from predecessors, can be protected. Students are taught to respect mathematical practices in their culture and their friends' cultures by connecting learning about mathematics to culture (Dwi et al., 2023; Fiantika et al., 2023). Understudies can likewise advance genuinely where they can encounter the delight of learning through the marvel and excellence of math acquired from their way of life and the way of life of different understudies in multicultural classes. Mathematics cannot be separated from culture. Suppose mathematics is associated with the social realm, which is connected to the cultural realm. In that case, it can foster a sense of love for local culture from students, which results in the growth of a spirit of nationalism. This is because mathematics is part of human activity regarding socio-cultural construction and is a cultural phenomenon and a pan-human activity. Mathematics has a significant role in meeting the needs of human life, namely solving problems in everyday life. Mastery of mathematics is a non-negotiable necessity in reasoning and decision-making in the 21st century (Muzakkir, 2021).

Malang Raya is an area with many historical heritages, both the history of the Hindu-Buddhist kingdoms and the historical heritage of the independence of the Republic of Indonesia. Historical heritage or sites around Malang Raya significantly contribute to society and education development. This site is essential to show, especially to students, so that they participate in maintaining and preserving ancestral culture, locality, and identity and practicing open thinking when interacting with local culture. This is one of the forms of applying Profil Pelajar Pancasila, carried out through mathematics learning activities where students can focus on building character in everyday life. We hope the site can also be protected from

damage caused by nature or human hands and use the site as a relevant learning resource. The education unit is one of the places to instill student character.

Character education in learning needs to be introduced early on, one of which is by using local cultural sites. Deepening knowledge about local culture can make students virtuous (Sari et al., 2022). Four characters appear in learning with cultural sites associated with mathematics in flat field material: critical thinking, creative thinking, responsibility, and having a sense of Cinta Tanah Air.

According to research results of Sari et al. (2022), character cultivation in teaching students ethnomathematics about flat building materials can be done through good learning planning, implementation, and assessment. It can gradually build students' character of responsibility and Cinta Tanah Air. The results of research conducted by (Widada et al., 2018), students' mathematical problem-solving abilities after being given the ethnomathematics model with the outdoor learning model were higher than before being given the learning model. The difference between the two studies is in the use of learning resources; this study uses learning resources from ancient sites in the Malang area, namely Singosari Temple, for fourth-grade elementary school students. The equations used examine learning outcomes and strengthen Profil Pancasila, namely Berkebhinekaan Global, which is expected to foster a sense of love for one's country. Learning about flat shapes in schools is still limited to concrete objects in schools so knowledge is still needed that there are many other objects or buildings related to flat shapes, for example, temples, what the shape of the temple is, what structures make it up, and what the characteristics are. from its constituent flat shapes. This research aims to determine whether learning with historical sites improves student learning outcomes and strengthens Profil Pelajar Pancasila.

LITERATURE REVIEW

Ethnomathematics

Ethnomathematics was coined to depict numerical hones in social bunches that can be distinguished and considered as the ponder of numerical thoughts found in each culture. "The prefix ethno is nowadays acknowledged as an extensive term that alludes to the social culture setting and thus incorporates dialect, language, and codes of behavior, myths, and images. The induction of arithmetic is troublesome but tends to be cruel to clarify, to know, to get it, and to do exercises such as ciphering, measuring, classifying, inducing, and modeling. The postfix tics are determined from techné and have the same root as procedure". According to Rachmawati (2022), Ethnomathematics is characterized as science practiced by social bunches, such as urban and provincial communities, bunches specialists, children of specific age bunches, inborn communities, and others. Culture and Mathematics are two terms interconnected in learning, namely in culture-based Mathematics learning, often called ethnomathematics (Situngkir, 2023).

Ethnomathematics is learning mathematics found in cultural cultures. Ethnomathematics can also apply mathematics in dealing with the natural environment and existing cultural systems (Priyanto et al., 2022). Research (Mania & Alam, 2021) found that with ethnomathematics, students can easily take lessons and recognize their culture based on the Indonesian National Curriculum. This follows research (Purba et al., 2022), which states that Ethnomathematics is very helpful in understanding the concepts of plane and geometry through local culture. From the conclusions over, it can be characterized that ethnomathematics is a strategy utilized to memorize arithmetic by including exercises or the culture of the encompassing range to make it simpler for somebody to get it. Ethnomathematics can be an elective strategy for an educator instructing understudies to get into science. With ethnomathematics, it is trusted that understudies can do more to investigate their metacognitive capacities, essential considering, and understanding capacities.

Ancient Sites as Learning Resources

Mathematics is a science that requires reasoning and application and has a significant role in mastering science and technology. Learning mathematics is a process of learning activities that, in practice, is expected to increase creative thinking to develop mastery of mathematical material. One of the materials studied by class IV elementary school students is a flat shape. Humans on this earth grow and develop in different places and environments so that each group develops different ideas, ways, styles, and techniques in responding to the realities of their lives (Prahmana, 2022). It can be interpreted that every human group has a different culture, although several groups may have the same culture because of a specific factor. Freudenthal and D'Ambrosio view mathematics as being obtained from culture. At the same time, there are many groups of people with different cultures in this world, and many systems of human knowledge exist in various cultures from these various human groups.

In general, learning mathematics is done in the classroom so that there is a decrease in students' interest and learning motivation. The presence of an ancient site in Singasari, namely the Singosari temple, will give a different feel to learning mathematics. Students no longer study indoors but can study outdoors by visiting and interacting with natural objects. Various mathematical activities and concepts such as measuring, calculating, and classifying appear in Indonesian culture. For example, in building a temple, there are basic patterns in geometric shapes such as triangles, squares, and rectangles (Apriandi & Ayuningtyas, 2022). One of the local cultures in Malang that can be used as a source of learning is the Singosari Temple. Singosari Temple is located in Candirenggo Village, Singosari District, Malang Regency, East Java. This temple is a relic of the Hindu-Buddhist kingdom in the form of a pile of andesite stones with a specific height, which is then carved from top to bottom. Singosari Temple is related to math material for class IV SD (phase B) geometry material, namely flat shapes with indicators of knowing flat shapes that form shapes. If you look closely, the Singosari temple comprises several flat shapes, including squares, rectangles, and triangles. Using the Singosari temple as a learning resource makes learning mathematics more meaningful because students can have direct contact with objects. So that students can find concepts and develop mathematical skills based on the experience they have gained.

Profil Pelajar Pancasila

Profil Pelajar Pancasila aims to support the President's Vision and Mission to create an advanced Indonesia that is sovereign, independent, and has personality. The realization of Indonesian students as lifelong students who have global competence and behave according to the values of Pancasila (Irawati et al., 2022; Lubaba & Alfiansyah, 2022). There are values handed down from the ancestors in Singosari Temple that can be used to form a Profil Pelajar Pancasila, which emphasizes the independent curriculum following the Vision and Mission of the Ministry of Education and Culture as stated in Permendikbud Nomor 22 Tahun 2020. Pancasila students embody Indonesian children's lifelong learning so they have various abilities and can compete globally while continuing to behave as Pancasila students.

Profil Pelajar Pancasila student has six main characteristics: (1) having faith, fearing God Almighty, and having noble character. Indonesian students who believe, fear God Almighty and have good character in their relationship with God Almighty. He understands the teachings of his religion and beliefs and applies his understanding in everyday life. There are five critical elements in the elements of faith, piety, and noble character, including a) religious morals, b) personal morals, c) morals towards humans, d) morals towards nature, and e) national morals. (2) global diversity: Indonesian students must maintain their noble culture, locality, and identity and be open-minded in interacting with other cultures to foster a sense of mutual respect. The elements and keys to global diversity are knowing and appreciating culture, having intercultural communication skills in interacting with others, reflection, and responsibility for the experience of diversity. (3) Cooperation: Profil Pelajar Pancasila is expected to have the ability to work together, including

the ability to carry out activities together voluntarily so that the activities can run smoothly, efficiently, and lightly. Elements of cooperation: collaboration, caring, and sharing. (4) independence: Indonesian students are independent students. Critical elements of self-reliance: awareness of oneself and the situation at hand as well as self-regulation, (5) critical reasoning: Indonesian students are students who can objectively process both qualitative and quantitative information, can build relationships between various information, can analyze the information obtained, can evaluate and conclude the information obtained. Elements of critical reasoning: obtaining information and ideas, processing information and ideas, analyzing and evaluating reasoning, reflecting on thoughts and thinking processes, and making decisions. Moreover, (6) creative: Pelajar Pancasila are creative students. Namely, they can change and produce something original, meaningful, practical, and impactful.

Critical elements of creativity: generating original ideas and producing original works and actions (Rahayuningsih, 2022). One of these six characteristics is global diversity. Indonesian students maintain their noble culture, locality, and identity and remain open-minded in interacting with other cultures so as to foster a sense of mutual respect and the possibility of forming a noble culture that is positive and does not conflict with the nation's noble culture (Bitto, 2023). Elements and keys to global diversity include knowing and appreciating culture, intercultural communication skills in interacting with others, and reflection on and responsibility for the experience of diversity (Wijayanti, 2023). The characteristics of students with global diversity using cultural sites, namely the Singasari Temple in mathematics learning, can be formed when the teacher teaches flat-shaped material by considering the elements of the cultural reality contained in the temple.

METHODS

The research design was truly experimental because the samples used in the experimental and control groups were randomly taken from a specific population. The experimental design used is a pretest-posttest control group design with the following research pattern. The experimental group and control group were taken at random and marked with the letter R. Initially, both groups were given a pretest (O_1 and O_3). Next, the experimental group was given treatment, namely learning mathematics using ethnomathematics, namely at a cultural site, namely the Singosari Temple, and the control group also received treatment by receiving conventional learning. After the treatment, both groups received post-test questions (O_2 and O_4). The research design is described in **Figure 1** below.

R	O_1	X	O_2	Experimental group
R	O_3		O_4	Control group

Figure 1. Research Design
 Source: Research 2023

The population used was elementary school students with a population of 148 fourth-grade elementary school students, and the sample used was 120 students consisting of 60 students in the experimental class and 60 students in the control class. Data analysis in this research uses IBM SPSS version 27 statistical data processing software. Data analysis in this research is generally the process of cleaning data (cleaning outliers), testing classical assumptions, and testing hypotheses. Data collection in this research was carried out by observation aimed at finding out the condition of students and their learning at school, tests aimed at obtaining student achievement results, which were carried out using ten essay questions in the pretest and posttest, questionnaires aimed at finding out the level of love for local culture of students. The questionnaire used consisted of 7 items with answer choices of agree and disagree with the following indicators:

1. Students know the location of Singosari,
2. Students know that Singasari Temple is a Hindu Buddhist temple,
3. Students know that Singasari Temple is a legacy of the Kertanegara Kingdom,
4. Students know that Singosari Temple needs to be preserved so that it does not disappear or become extinct,
5. Students understand that Singosari Temple reflects tolerance between religious communities.
6. Students understand the material about flat shapes with the help of Singosari temple,
7. Students understand that preserving Singosari Temple is a shared responsibility.

RESULTS AND DISCUSSION

At Singosari Temple, one of the ancient sites, mathematics learning is expected to be effective for students and teachers. Learning with Singosari Temple provides a balanced, rich learning experience, improves the quality of student-student and inter-learner interactions, and is beneficial in a meaningful learning environment so that students can be more interactive in learning and recognize, learn, and preserve local culture.

Table 1. Student Learning Outcomes in Experiment Class and Control Class

No	Item value	Experiment		Control	
		Pre-Test	Post-test	Pre-test	Post Test
1	Highest score	68	94	68	90
2	lowest score	55	84	53	77
3	Average	61.05	88.60	61.27	83.88

Source: IBM SPSS Statistic 25

Table 1 shows information on the experimental group's score: the highest pre-test was 68, the lowest was 55, the highest post-test result was 94, and the lowest was 84. The control group's score on the pre-test was the highest 68, the lowest was 53, the highest post-test score was 90, and the lowest was 77. The class average for the pre-test was 61.05, the post-test was 88.60, the control class average for the pre-test was 61.27, and the post-test was 83.88. From these results, it can be concluded that there has been an increase based on the average post-test scores for the experimental and control classes. However, the highest average is in the experimental class, meaning learning with historical sites can improve student learning outcomes. Several tests were carried out to show these differences, which are presented in **Tables 2, 3, and 4**.

Table 2. Normality Test

<i>Tests of Normality</i>				
<i>Shapiro-Wilk</i>				
Group		<i>Statistic</i>	<i>df</i>	<i>Sig.</i>
Pretest	Experiment	0.962	60	0.057
	Control	0.968	60	0.705
Posttest	Experiment	0.963	60	0.066
	control	0.963	60	0.065

a. Lilliefors Significance Correction

Source: IBM SPSS Statistic 25

The normality test is a test of the normality of data distribution. The normality test assumes that the data for each variable comes from a normally distributed population. The statistical test used in this research is the Shapiro-Wilk test. Table 2 shows the results of the normality test. 1) In the pre-test, the experimental group obtained a significant value of 0.057. This value is greater than the specified significance level, namely 0.05, so the data is usually distributed. 2) the experimental group in the post-test obtained a significant value of 0.066; this value is greater than the specified significance level, namely 0.05, so the data is usually distributed. 3) the control group obtained a significant value 0.705 in the pre-test. This value is greater than the specified significance level, namely 0.05, so the data is usually distributed. 4) the control group obtained a significant value of 0.065 in the post-test; this value is greater than the specified significance level, namely 0.05, so the data is usually distributed. So, it can be concluded that each group in the data is usually distributed.

Table 3. Homogeneity Test

<i>Tests of Homogeneity of Variances</i>					
		<i>Levene Statistic</i>	<i>df1</i>	<i>df2</i>	<i>Sig.</i>
Pretest	<i>Based on Mean</i>	0.718	1	118	0.369
Posttest	<i>Based on Mean</i>	1.877	1	118	0.173

Source: IBM SPSS Statistic 25

The homogeneity test is used to determine whether there are similarities between several population variants. This test is a prerequisite for independent sample t-test analysis. The equality of two variances test tests whether the data distribution is homogeneous by comparing the two variances. The homogeneity test uses Levene's test. Based on Table 3, the significant value in the pre-test for both groups, namely the experimental group and the control group, is 0.369; this value is greater than the specified significant level, namely 0.05, so both data have the same variance. A significant value of 0.173 was obtained for the post-test, greater than 0.05, so both data had the same variance. In each group, the pretest and posttest were higher than the specified significance level of 0.05. So, it can be concluded that the experimental and control groups in the pretest and posttest data have the same variance or are homogeneous.

Table 4. Student Learning Outcomes of Experiment Class and Control Class

<i>Independent Samples Test</i>					
		<i>t-test for Equality of Means</i>			
		<i>t</i>	<i>df</i>	<i>Sig. (2-tailed)</i>	
Pretest	<i>Equal variances assumed</i>	-0.392	118	0.696	
	<i>Equal variances not assumed</i>	-0.392	117.436	0.696	
Posttest	<i>Equal variances assumed</i>	9.714	118	0.000	
	<i>Equal variances not assumed</i>	9.714	116.271	0.000	

Source: IBM SPSS Statistic 25

Test the hypothesis in this research using the independent t-test. The independent t-test is an inferential statistical test used to see the difference in averages in two independent groups. Based on Table 4, independent t-test, Sig. (2-tailed) on pretest data of 0.696. This value is greater than the specified significance level, namely 0.05. This means that the averages of the experimental and control groups at the pretest were not significantly different. So, it can be concluded that the experimental and control groups had comparable initial abilities before treatment. In the post-test data, the independent t-test results obtained a Sig value. (2-tailed) of 0.000. This value is smaller than the specified significance level, namely

0.05. This means that the averages of the experimental and control groups at the post-test were significantly different.

From the analysis results, it can be concluded that students in the experimental and control groups had the same initial abilities before receiving treatment, as seen from the students' pre-test scores (Table 1). After receiving treatment, the two groups obtained different results (table 4); this was confirmed by the post-test score obtained by the experimental group, which was higher than the control class (table 1). So learning mathematics with learning resources, namely Candi Singosari, on flat shapes material for fourth-grade elementary school students with the indicator used is knowing the flat shapes that make up these shapes can improve student learning outcomes. This is because by using the Singosari Temple archaeological site, students are exposed directly to natural objects, not abstract ones, so learning is more interesting, and students can explore themselves and understand the material provided.

To determine the increase in *cinta tanah air*, researchers used a questionnaire of 7 indicators with seven statements with answer choices of agree and disagree. From the questionnaire, it was obtained as follows.

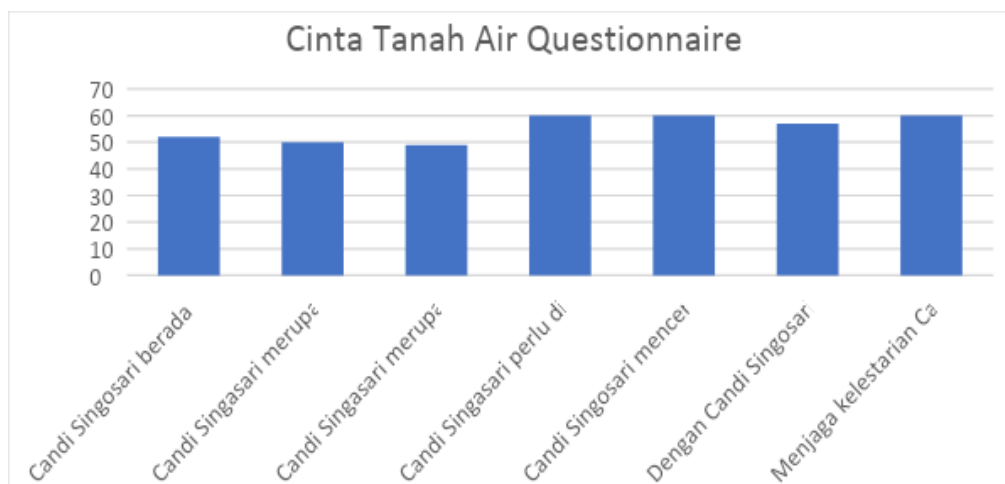


Figure 2. Cinta Tanah Air and Responsibility Questionnaire
Source: *Cinta Tanah Air Questionnaire Data*

From the bar diagram in **Figure 2**, information is obtained after the learning has been carried out

1. Students know the location of Singosari Temple by 52%.
2. Students know that Singasari Temple is 50% Hindu Buddhist.
3. Students know that the Singasari Temple is a 49% legacy of the Kertanegara Kingdom.
4. Students know that the Singosari temple needs to be preserved so that it does not disappear or become extinct by 60%.
5. Students understand that the Singosari temple reflects 60% tolerance between religious communities.
6. Students understand the material about flat shapes with the help of the Singosari temple by 58%.
7. Students understand that preserving Singosari Temple is a shared responsibility of 60%.

From the data processing results, it can be concluded that learning mathematics, which is carried out with ancient sites, can increase students' *cinta tanah air* and responsibility to foster a strong character in students so that it can strengthen Profil Pelajar Pancasila.

Discussion

Singosari Temple is a Hindu-Buddhist temple built in the 14th century AD. Information on the construction of Singosari Temple is based on the discovery of the Gajah Mada inscription in 1351 AD. The temple's construction was dedicated to King Kertanegara as an offering to honor King Kertanegara as the last King of the Singasari Kingdom who had died. Singosari Temple underwent restoration by the Indian Antiquities Service in 1934-1937 AD to its current form, where the restoration contained ethnomathematics indicators, namely building design activities. Singosari Temple has a unique architectural style, with its tower-style building composed of andesite rock. The foot of the temple is used as a niche to place the statue of the Shiva family, while the body and roof of the temple are empty spaces. This temple does not appear to have been completed based on indications that the upper part of the building has been carved with decorative motifs. In contrast, the lower part still has the basic shape of the temple components without decorative motifs. Singosari Temple's courtyard is a collection of statues from the surrounding temples (Wulandari, 2020).



Figure 3. Singasari Temple

Source: <https://kebudayaan.kemdikbud.go.id/bpcbajtim/candi-singosari/>

According to **Figure 3**, the temple is generally divided vertically into three building structures. Each structure's meaning forms the temple building and represents the three universes (Triloka). The foot of the temple symbolizes the lower realm (Bhurloka), namely the realm of the human world, which is dominated by worldly things. The body of the temple symbolizes the realm between (Bhuahloka) and the realm of the human world, which is no longer tied to worldly things. The temple roof symbolizes the upper world (Shuahloka), namely the world of the gods (Wulandari, 2020). In Singosari Temple 3, the structures are described in **Figure 4**.

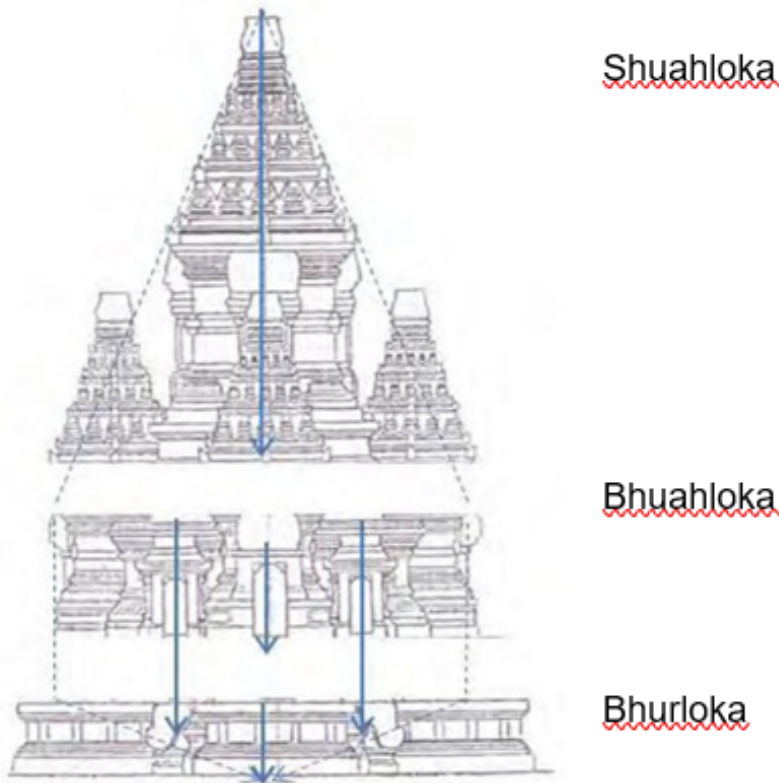
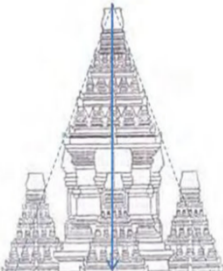
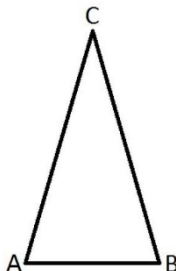


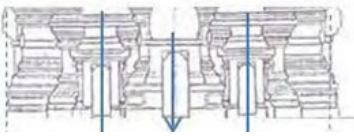

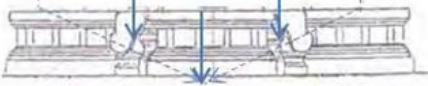
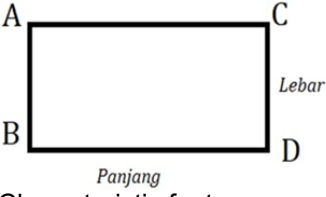
Figure 4. Building Structure of Singosari Temple

Source: <https://www.dictio.id/uploads/db3342/original/2X/e/e46feab94c52a1c8a7a905f5f7197e3d3be89822.jpg>

At Singosari Temple, several elements contain or implement geometric mathematical concepts. This supports phase B mathematics learning. At the end of Phase B, students can describe the characteristics of various flat shapes (quadrilaterals, triangles, polygons). They can arrange (composition) and decompose various flat shapes in multiple ways if possible. The concept of a flat structure in the Singosari temple is described in **Table 5** below.

Table 5. Relationship between Singosari Temple Building Structure and Mathematics

No	Structure of Singasari Temple	Two-dimensional figure
1		Triangle  Characteristic features: 1. Number of sides it has 3 2. The number of angles it has is 3

No	Structure of Singasari Temple	Two-dimensional figure
2	Bhuahloka 	Quadrilateral: Rectangular  Characteristic features 1. has four sides 2. has four corners 3. The angle formed is a right angle 4. Opposite sides are the same length
3	Bhurloka 	Quadrilateral: Rectangular  Characteristic features 1. has four sides 2. has four corners 3. The angle formed is a right angle 4. Opposite sides are the same length

Source: <https://www.dictio.id/uploads/db3342/original/2X/e/e46feab94c52a1c8a7a905f5f7197e3d3be89822.jpg>

This research shows that there are better learning outcomes between the students who were taught mathematics at the ancient site, namely Singasari Temple, compared to the students who did not use the ancient site. This research strengthens the statement that mathematics learning requires 3D media (Ratnawati et al., 2022) and requires real situations that students often face so that it can increase students' interest in learning, which in turn can improve student learning outcomes (Widada et al., 2018) in Geometry material. This is also following the research results of (Sarwoedi et al., 2018), the mathematical understanding ability of students who receive inquiry learning with ethnomathematics is better than the increase in the mathematical understanding ability of students who receive conventional learning and research, namely mathematics-based learning. Ethnomathematics is effective in students' mathematical understanding abilities. Following the previous statement, with ethnomathematics, students can directly explore metacognitive abilities and critical thinking and hone contextual problem-solving abilities encountered in everyday life so that students' mathematical abilities can improve.

Ethnomathematics facilitates students' ability to construct mathematical concepts with the initial knowledge they already have, namely from the students' environment. Ethnomathematics provides a learning environment that is motivating and enjoyable for students (Gasong & Tandiseru, 2022), and ethnomathematics can foster a love of local culture (Wikan et al., 2023). From ethnomathematics, affective competence can be built by fostering a sense of appreciation, having a spirit of nationalism, and having pride in historical heritage in the form of sites, traditions, and art. From the spirit of nationalism, the character of love for the country will be embedded, which is expected to continue to be cultivated in students to maintain and preserve Indonesian culture, especially local culture. In other words, teachers have the perception that the selection and use of learning resources, learning media, and learning models are essential and require careful preparation so that learning runs effectively and efficiently (Mardani & Sadyana, 2022) that it can strengthen Profil Pelajar Pancasila (Suriswo et al., 2023).

CONCLUSION

The presence of ancient sites in Singasari, namely the Singosari temple, is more effective than the usual learning given by the teacher. This happens because learning with the Singosari Temple gives a different feel to learning mathematics, such as students no longer studying indoors. However, students can study outdoors by visiting and interacting with natural objects. In addition, learning with cultural sites associated with mathematics can form characters following Profil Pelajar Pancasila, namely thinking critically, creatively, responsibly, and having a sense of *cinta tanah air*. Suggestions from this research include learning from historical sites. These, namely temples, are a form of ethnomathematics that can be continued by other researchers using both flat and spatial construction materials. Students can directly explore the material in this contextual learning to develop critical and creative thinking skills. Learning with historical sites still needs to be perfected with further testing so that its usefulness can be tested, and Ethnomathematics learning can take advantage of the local culture of each region so that it can introduce local culture to students. Introducing local culture through ethnomathematics aims to foster a sense of belonging, foster love for local culture, and participate in preserving it in students.

AUTHOR'S NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. The author confirms that the data and content of the article are free from plagiarism.

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