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The Influence of the 'Earth Tells' Module Based on Ethnomathematics on the Mathematical Literacy Skills of Fifth Grade Elementary School Students

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ABSTRACT. The low level of mathematical literacy among elementary school students in Indonesia has become a significant problem in education, as mathematical literacy encompasses not only arithmetic skills but also logical thinking, problem-solving, and the application of mathematical concepts in everyday life. This research aims to examine the effect of using the ethnomathematics-based module 'Bumi Bercerita' on the mathematical literacy skills of fifth-grade elementary school students. A quasi-experimental method with a Nonequivalent Control Group Design was used, involving 55 fifth-grade students at SDN 106161 Laut Dendang, with 28 students in the experimental group and 27 in the control group. Data were analyzed using an independent sample t-test. The analysis results show a significance value of 0.007 ($p < 0.05$), indicating a statistically significant difference between the mathematical literacy outcomes of students in the experimental class and the control class. Therefore, the ethnomathematics-based module has been proven to be more effective in enhancing students' ability to formulate problems, apply concepts, interpret results, and evaluate solutions, as well as in fostering a more positive attitude towards learning mathematics.

Kata Kunci : *Ethnomathematics; Mathematical Literacy Skills, Elementary School*

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INTRODUCTION

One of the subjects that plays an important role in enhancing the intellectual capacity of a nation and shaping human character more broadly is mathematics (Umi Kalsum, 2023). Mathematics is an essential subject that must be taught to students at all levels of education. At the elementary school level, mathematics serves as a foundation for developing students' critical and logical thinking skills (Astuti, Wibawa, & Zulfiati, 2024). Because of its significance, mathematics is taught from elementary school to high school (Witha, Karjiyati, & Tarmizi, 2021). Furthermore, problem solving in mathematics is the process or method used to find solutions to a problem, which can later be applied to similar real-life situations (Rahmadani & Wandini, 2024). However, in reality, many students in educational institutions struggle with mathematics, as mathematics is consistently considered one of the most difficult and unpopular subjects (Nurlaila Sapitri, 2023). One of the main factors contributing to the low level of mathematical literacy is the perception that mathematics is fundamentally difficult to learn. However, mathematical literacy plays an important role in learning, as it encourages students to think critically, solve problems, and effectively formulate and apply their ideas (Sahputra, 2024).

Mathematical literacy is defined as students' ability to apply mathematical knowledge to solve real-world problems. Nevertheless, the level of mathematical literacy among Indonesian students is still relatively low. On Tuesday, December 5, the Ministry of Education, Culture, Research, and Technology (Kemendikbudristek) announced the results of PISA 2022, which showed an improvement in Indonesia's mathematical literacy ranking from 72nd to 67th. According to Minister Nadiem Anwar Makarim, this improvement reflects the resilience of Indonesia's education system in responding to learning disruptions due to the pandemic (Topan Iskandar, 2023). Stacey and Turner identified four key indicators to assess students' mathematical literacy: formulating problems, using problem-solving methods, interpreting results, and evaluating solutions (Rahmasari & Setyaningsih, 2023).

Based on the explanation above, it is clear that mathematical literacy is not just about counting skills, but also the ability to think logically and solve problems in daily life. Therefore, mathematical literacy is an important component for achieving meaningful learning and serves as a valuable metric in assessing student learning outcomes. Teachers will be more effective in teaching mathematics if they themselves have strong mathematical skills (Siregar, 2022). The initial test results in this study revealed that students' mathematical literacy is generally low and underdeveloped. Many students struggle to calculate the volume of three-dimensional shapes due to their inability to remember and apply the correct formulas. In total, 21 out of 55 students (11 from Class B and 10 from Class A) could not correctly answer the related questions.

Furthermore, during classroom learning, students often hesitate to ask questions when they do not understand the material. As a result, teachers assume that students have fully grasped the concepts. In practice, students will copy notes from the board immediately after the teacher's explanation, leading to passive learning, where the teacher dominates the learning process and students remain disengaged. This highlights the urgent need for more effective learning strategies that can help students understand mathematics in a more meaningful way. One potential solution is to connect mathematics learning with local cultural contexts, an approach known as ethnomathematics. This method incorporates cultural elements into mathematics learning, allowing students to not only understand mathematical concepts but also gain awareness of cultural values and character development (Febriyanti & Ain, 2023). As stated (Yusnaldi, 2024), Meaningful learning experiences are most effective when students are engaged cognitively, affectively, and psychomotorically with their surrounding environment. Therefore, it is important to provide culturally-based learning media that supports active and contextual learning.

Students are individuals who are still in the stage of developing their potential (Putri & Iskandar, 2023). Therefore, learning media play a strategic role in supporting students' understanding, especially on topics such as spatial geometry, which is often considered abstract and difficult. Learning media are aids in the delivery of learning material (Mardianto, Anas, Baniah,, & Sadat, 2021). However, the media must be carefully selected to match the subject matter being taught (Nur, Lubis, Amalia, Sitepu, & Wandini, 2023). The purpose of using learning media is to facilitate the effective delivery of material and to prevent students from becoming bored (Priyani, 2022). Maulida emphasizes that the module is a structured learning material that includes an introduction, content, and conclusion. The module supports independent learning while also helping teachers deliver lessons more effectively (Aristya, Ramadhana, & Rusli, 2025). As stated by (Maulida, Jatmiko, & Katminingsih, 2020) explains, the module allows students to understand the content at their own pace, which contributes to their mastery of the subject matter.

Well-designed teaching modules that align with student characteristics and curriculum guidelines can enhance mathematical understanding, encourage critical and analytical thinking, and help students apply mathematical concepts in real-life situations (Siloto, 2023). The module also provides opportunities for independent learning, supported by exercises and explanations (Fatmawati & Hanik, 2024). This makes it an effective tool for creating interactive learning experiences. Several studies have examined the influence of the "Telling Earth" module on the

mathematical literacy of fifth-grade students, among others: "The Role of Ethnomathematics-Based Learning Models as an Innovation in Increasing Mathematical Literacy" (Surat, 2018), Development of Ethnomathematics LKPD Based on RME to Improve Students' Mathematical Literacy (Lestari, Dwijayanti, & Siswanto, 2023). Development of PBL Devices Containing Ethnomathematics to Improve Mathematical Literacy of 5th Grade Students (Khatimah & Fatimah, 2023), and "Development of Ethnomathematics-Based Learning Modules to Improve Mathematical Literacy."

Although ethnomathematics-based learning has been widely implemented, there is little research that emphasizes its unique application in improving mathematical literacy. The uniqueness of this research lies in its learning strategy, which connects learning content with various elements of Indonesian culture, rather than focusing on a single regional culture. Another innovative aspect is the use of specially designed teaching modules that are visually appealing and student-friendly, which not only contain illustrative images but also a collection of formulas and colorful layouts to enhance student motivation and engagement.

The selection of this media is based on initial findings that indicate this approach has not been applied in spatial geometry teaching. Therefore, this research aims to determine the effectiveness of the ethnomathematics-based 'Bumi Bercerita' module in improving students' mathematical literacy and understanding. It is hoped that this culturally contextualized media can help students to better remember, formulate, and evaluate mathematical concepts, thereby enhancing understanding and retention. Based on the background presented, the researcher is motivated to further explore the impact of the 'Bumi Bercerita' module on the mathematical literacy of fifth-grade students, with the hope that this module is valid, relevant, and effectively implemented in the educational environment.

METHOD

This research uses a quasi-experimental method, which is a research approach aimed at determining the effect of a treatment on other variables in a controlled environment. In this method, the selection of research subjects is done without randomization (Creswell, 2020). The specific design used in this study is Nonequivalent Control Group Design, which involves two groups: the experimental group and the control group, both of which are assigned without randomization.

The researchers chose this experimental method to determine the difference in learning outcomes between students who used the "Bumi Bercerita" module based on ethnomathematics and those who did not. Before the treatment was given, both groups underwent a pretest to identify the initial conditions of the students and to ensure that there were no significant differences between the two groups. The quasi-experimental research design is presented as follows (Sugiyono, 2022):

O1 X O2

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O3 O4

Key:
O1: Pretest for the experimental group
O2: Posttest for the experimental group
O3: Pretest for the control group
O4: Posttest for the control group
X: Treatment using the module 'Earth Tells'.

This research was conducted at SDN 106161 Laut Dendang, Percut Sei Tuan District, Deli Serdang Regency, North Sumatra. The subjects of this study are fifth-grade students, consisting of 27 students from class VA and 28 students from class VB, for the subject of mathematics.

Population refers to the entire group of individuals, animals, events, or objects in a specific environment that are the subject of conclusions based on research findings. Thus, the population is not limited to humans, but can also include objects or elements from nature. Meanwhile, a sample is a part of the population that has specific characteristics and is selected to represent the population in the study (Rijal et al., 2019). In this study, the sample consists of fifth-grade students at SDN 106161 Laut Dendang. The determination of the class for the control and experimental groups was carried out using non-probability sampling techniques.

Table 1. Division of Experimental and Control Classes

School Name	Group	Class	Number of Students
SDN 106161 Laut Dendang	Control	VA	27
	Experiment	VB	28
Total			55

Class VB, consisting of 28 students, serves as the experimental group that receives treatment using the ethnomathematics-based module 'Bumi Bercerita'. This module is specifically designed to support the learning of three-dimensional geometry for elementary school students. The module aims to help students understand mathematical concepts, particularly geometry, through the context of local culture, real-life applications, and contextual activities. The 'Bumi Bercerita' module is developed in two formats: print version and interactive digital flipbook (available at: https://online.flippingbook.com/view/269950347/). The printed module is used during face-to-face class sessions, while the digital version serves as an additional resource that can be accessed through electronic devices such as computers, laptops, tablets, or smartphones. The interactive flipbook is intended to enhance student engagement through appealing visuals, intuitive navigation, and interactive features that are not present in the printed version.

The development of the module involves several stages: planning ethnomathematics-based content, designing layouts, preparing materials, and converting the print version into a digital flipbook. The module's content incorporates elements of local culture, such as traditional houses and food, which are relevant to geometric concepts. During the implementation, the experimental class used the print module in class, with both media formats enhancing the learning experience.

It is hoped that the use of these two formats will help students better understand geometric concepts by linking them to the local cultural context while also increasing motivation, active participation, and enthusiasm in learning mathematics. Conversely, Class VA (27 students) serves as the control group, which follows conventional learning methods using textbooks provided by the government and does not receive special treatment. This study uses a mathematics literacy ability test as the main research instrument. The indicators of mathematics literacy are presented in Table 2:

Table 2. Indicators of Mathematical Literacy Ability

Indicator	Mathematical Literacy Process
Formulating	- Students understand information and use the correct mathematical formulas - Converting real-world problems into mathematical representations using diagrams and formulas.
Hiring	- Students apply the appropriate model or method to solve mathematical problems.
Interpreting	- Students explain their solutions based on the given context - Drawing accurate conclusions.
Evaluating	- Students review their answers and relate them to real-life situations.

Mathematical literacy in this study is measured using four indicators: formulating problems, using methods, interpreting results, and evaluating solutions. Students are expected to understand

problem information, translate it into the appropriate mathematical form, choose the right problem-solving methods, interpret results in context, and evaluate the application of their solutions in real-life situations.

To ensure that the pretest, posttest instruments, and questionnaires are accurate in measuring mathematical literacy, validity and reliability tests were conducted. The multiple-choice test consists of 10 questions. The instrument was validated on a group of 20 students outside of the research sample using Pearson Product Moment correlation. The validity test results showed that the item correlation values ranged from 0.447 to 0.826, all of which exceeded the r-table value of 0.4438 at a significance level of 5% (N=20), indicating that all items are valid.

The analysis of the difficulty level reveals: 3 easy questions (items 1, 3, and 6), 4 questions of medium difficulty (items 2, 4, 5, and 8), and 3 difficult questions (items 7, 9, and 10).

The power index test shows: 4 items are classified as very good (items 4, 5, and 9), 5 items are classified as good (items 2, 3, 6, 7, and 10), and 1 item is classified as sufficient (item 1).

The reliability test conducted using Cronbach's Alpha yielded a value of 0.738, which is categorized as high. Therefore, the items for the pretest and posttest are declared valid and reliable for data collection. In addition, the student attitude questionnaire is used to assess students' attitudes and perceptions. This questionnaire was also validated using Pearson Product Moment correlation, with item correlation values ranging from 0.470 to 0.574, all of which exceed the r-table value of 0.4438, confirming the validity of all items. The reliability of the questionnaire, which was also tested using Cronbach's Alpha, resulted in a value of 0.712, indicating that the instrument is reliable.

After the data collection from the experimental and control classes, normality and homogeneity tests were conducted. Hypothesis testing was then performed using the Independent Samples T-Test. The questionnaire was distributed after the treatment phase, and the average scores for each item were calculated for analysis.

RESULTS AND DISCUSSION

RESULTS

The pre-test is given before the learning process to measure the students' initial mathematical literacy skills in the control class and the experimental class. The pre-test scores are important to ensure that both groups have relatively equivalent baseline abilities before being given different learning treatments. The descriptive statistics of the pre-test scores for both groups are presented in the table below:

Table 3. Descriptive Statistics of Pretest Scores in Mathematical Literacy

	N	Range	Minimum	Maksimum	Means	Standard Deviation
Initial Control Test	27	40	20	60	42.59	13.183
Experimental Pre-test	28	60	10	70	42.86	18.228
Valid N (based on the list)	27					

From the table above, it can be seen that the average pre-test score in the control class is 42.59, while in the experimental class it is 42.86. The standard deviation for the control class is 13.183, and 18.228 for the experimental class. These results indicate that both classes are relatively comparable in terms of initial ability, making both suitable as samples for further treatment and comparison.

After conducting the learning activities using the ethnomathematics-based module 'The Earth Tells a Story' in the experimental class and conventional learning in the control class, a post-

test was administered to determine the improvement in students' mathematical literacy. The results are summarized in the table below:

Table 4. Descriptive Statistics of Posttest Scores in Mathematical Literacy

	N	Range	Minimum	Maksimum	Means	Standard Deviation
Post-Test Control	27	50	20	70	46.30	15.479
Post-experimental test	28	60	30	90	58.93	17.709
Valid N (based on the list)	27					

Based on the data above, the average posttest score in the control class is 46.30, while in the experimental class it reached 58.93. The greater increase in the experimental class indicates that the use of the 'Bumi Bercerita' module has a positive impact on students' mathematical literacy. A more detailed analysis was conducted on the average pre-test and post-test scores of students based on literacy indicators, to measure the level of improvement in each component of mathematical literacy. These indicators include: formulating problems, applying concepts, interpreting results, and evaluating solutions. The results are shown in the table below:

Table 5. Average Scores of Pretest and Posttest Based on Mathematical Literacy Indicators

Literacy Indicators	Class	Average Pretest	Average Post-Test
Formulating the Problem	Control	1.52	1.56
	Experimental	1.52	1,96
Employment Issues	Control	0,96	1.04
	Eksperimental	1.04	1.30
Interpreting the Problem	Kontrol	0.81	0,85
	Eksperimental	0,85	1.22
Evaluate Solutions	Kontrol	1.00	1.19
	Eksperimental	1.04	1.67

On the problem formulation indicator, both groups started with the same average score of 1.52. After the treatment, the control class slightly increased to 1.56, while the experimental class increased more significantly to 1.96. For the problem-solving indicator, the control group increased from 0.96 to 1.04, while the experimental group increased from 1.04 to 1.30. On the problem interpretation indicator, the control class showed a slight increase from 0.81 to 0.85, while the experimental class increased from 0.85 to 1.22. Finally, for the solution evaluation indicator, the control group increased from 1.00 to 1.19, and the experimental group from 1.04 to 1.67.

The results show that the experimental class outperformed the control class on all indicators, indicating that the 'Earth Tells a Story' module based on ethnomathematics is effective in improving every aspect of mathematical literacy.

Table 6 Results of the Shapiro-Wilk Normality Test

	Kolmogorov-Smirnov dan			Shapiro-Wilk		
	Statistics	df	Sig	Statistics	df	Sig
Pre-test Control	,121	27	,200 *	,958	27	,337
Post-Test Control	,150	27	,122	,931	27	.075
Experimental Pretest	,152	27	,111	,944	27	,154
Posttest Experiment	,113	27	,200 *	.950	27	,214
*. This is the lower bound of actual significance.						
a. Lilliefors Significance Correction						

Based on the table above, the significance value (Sig.) of all pretest and posttest data in both classes is greater than 0.05. Therefore, it can be concluded that the data is normally distributed and meets the requirements for parametric testing. Furthermore, a homogeneity test was conducted to determine if the variances among groups are similar (homogeneous). This test was carried out using Levene's Test. The results of the homogeneity test are presented in the following table:

Table 7. Results of Homogeneity Test

		Levene's Statistics	df1	df2	Sig
Value	Based on the Average	,215	1	53	,645
	Based on MedianBased on Median	,241	1	53	,625
	Based on the Median and with adjusted df	,241	1	52.244	,625
	Based on the trimmed average	,231	1	53	,633

The test results above show that the significance value on the pretest and posttest data is greater than 0.05. This means that the data has homogeneous variance and meets the requirements for parametric testing. Furthermore, to determine the differences in posttest results between groups, an Independent samples t-test was conducted. The results of the hypothesis test are shown in the table below:

Table 8. Results of the Independent Sample Test

Independent Sample Test										
		Levene's test for equality of variances		t-test for Mean Equality						
		F	Sig	T	df	Sig (2 pieces)	Average Difference	Difference in Standard Error	95% Confidence Interval of the Difference	
									Lower	Above
Value	Equal variances are assumed	,215	,645	-2.812	53	.007	-12.632	4.492	-21.641	-3.623
	The same variance is not assumed.			-2.819	52.505	.007	-12.632	4.481	-21.621	-3.644

The results of the independent sample t-test show that there is a significant difference in posttest results in both the control class and the experimental class. This is indicated by the significance values (2-tailed) of 0.007 for both the control class and the experimental class, which

are both less than 0.05. Therefore, the null hypothesis (H_0) stating that there is no difference between the two groups is rejected, and the alternative hypothesis (H_1) is accepted. In addition to measuring mathematical literacy skills, this study also measured students' attitudes towards learning through a Likert scale questionnaire containing 10 positive statements. The questionnaire was given after the posttest to all students in both classes. The results of the average recap of the questionnaire are presented in the following table:

Table 9. Average Results of Student Attitude Questionnaire

Statement	Control	Experiment
1	3,89	4,04
2	3,48	3,89
3	3,52	3,89
4	3,19	3,86
5	3,26	3,71
6	2,96	3,82
7	3,37	3,75
8	3,44	3,71
9	3,67	3,82
10	3,67	3,71
Average Total	3,44	3,82

Data shows that students in the experimental class have a higher average attitude of 3.82 compared to the control class which only reached 3.44. This indicates that the ethnomathematics-based learning approach using the 'Bumi Bercerita' module can foster a positive attitude among students towards mathematics learning.

Discussion

Based on the research results, it was found that the mathematical literacy skills of fifth-grade elementary school students who participated in learning using the Earth Tells module based on ethnomathematics experienced a more significant increase compared to students who followed conventional learning. This is evident from the average scores of the pretest and posttest of both classes, which originally had relatively equivalent initial average abilities, namely the experimental class at 42.88 and the control class at 42.59, but after learning, the average posttest score in the experimental class increased to 58.93, while in the control class it only rose to 46.30. This substantial difference in score improvement indicates that the use of the Earth Tells module based on ethnomathematics has a positive impact on students' mathematical literacy abilities. This module is able to present meaningful learning situations by providing questions wrapped in local cultural stories, making it easier for students to understand concepts, apply them in everyday life, and feel closer and more familiar with the material being studied. Furthermore, analysis based on mathematical literacy indicators shows that the performance of students in the experimental class has improved more significantly compared to the control class on all four tested literacy indicators.

The results of the normality test showed that the pretest and posttest data in both classes were normally distributed with a significance value greater than 0.05, and the homogeneity test also stated variance between homogeneous classes. Thus, the research data is eligible for parametric testing in the form of an independent sample t-test. Based on the results of data analysis using an independent sample t-test, a significance value of 0.007 was obtained, which is smaller than the

significance limit of $\alpha = 0.05$. This shows that there is a significant difference between the mathematical literacy ability of students in experimental classes using ethnomathematics-based "Bumi Bercerita" modules and students in control classes who follow conventional learning. This difference indicates that the module 'Bumi Bercerita' has a real and positive impact on improving the mathematical literacy skills of fifth-grade elementary school students. The module successfully creates a more contextual, enjoyable, and meaningful learning environment because the material relates to stories of local cultures that are relevant to the students' daily lives. This connection makes mathematical concepts, which are initially abstract, more concrete and easier for students to understand. This proves that the application of ethnomathematics-based modules has a real influence on improving the mathematical literacy skills of fifth-grade elementary school students.

Based on the indicators of mathematical literacy, it was found that the improvement in students' abilities in the experimental class was better in all aspects compared to the control class. This can be seen across each indicator. For the Problem Formulation indicator, the average post-test score in the experimental class increased from 1.52 to 1.96, while in the control class it increased slightly from 1.52 to 1.56. This improvement is attributed to the module presenting culturally-based story problems that are closely related to students' experiences, such as stories about traditional houses, tools, or foods that involve geometric elements. These stories help students better understand the context of the problems and make it easier for them to identify the mathematical problems that need to be solved.

For the Using Concepts indicator, the average post-test score increased from 1.04 to 1.30 in the experimental class, while in the control class it only increased from 0.96 to 1.04. The *Bumi Bercerita* module presents mathematical concepts through culturally-based story problems, such as calculating the volume of a traditional water jug, the surface area of traditional houses, or the capacity of ceremonial spaces. In this way, students were able to apply geometric concepts in real-life contexts they are familiar with. According to Noto and Rohana, culturally-based learning is highly effective in improving conceptual understanding because students can directly observe the application of abstract concepts in their everyday lives, thus making the material more concrete and meaningful.

Regarding the Interpreting Results indicator, the experimental class experienced an increase in average score from 0.85 to 1.22, while the control class only improved from 0.81 to 0.85. The *Bumi Bercerita* module not only trains students to calculate results but also encourages them to interpret those results within the context of the story. For instance, after calculating the capacity of a water jug for a traditional ceremony, students are asked to assess whether the result is sufficient or not. This activity is essential in training students' ability to interpret mathematical results in real-life situations. This aligns with OECD reports which emphasize the importance of interpreting mathematical outcomes in everyday contexts as part of mathematical literacy.

For the Presenting Solutions indicator, the average score in the experimental class increased from 1.04 to 1.67, while in the control class it rose from 1.00 to 1.19. The *Bumi Bercerita* module provides opportunities for students to evaluate the solutions they have obtained, either by comparing them with the context of the story or exploring alternative solutions that might be more efficient or logical. For example, in determining the floor area of a traditional house for a cultural ceremony, students are encouraged to reassess whether their calculation aligns with the number of expected attendees. According to Bruner, culturally contextual learning can enhance students' reflective thinking skills, as they are prompted to think within real situations rather than simply solving abstract numerical problems.

These findings are consistent with the statement by (Ratriana, Purwoko, & Yuzianah, 2020) that mathematical literacy not only involves solving numerical problems but also includes the ability to understand, interpret, and apply mathematical concepts in various real-life contexts. The *Bumi Bercerita* module, which integrates elements of local culture into mathematics instruction, has proven effective in creating a contextual, enjoyable, and experience-based learning atmosphere for students. In addition to the improvement in mathematical literacy skills, results from the Likert-

scale questionnaire administered after the post-test also showed that students in the experimental class had a more positive attitude toward learning mathematics compared to the control class. The average questionnaire score in the experimental class reached 3.82, while the control class only scored 3.44. This indicates that learning through the *Bumi Bercerita* ethnomathematics-based module was able to foster students' interest, enjoyment, and motivation. A pleasant and meaningful learning environment encouraged students to engage more actively in the learning process. This supports Bruner's view that story-based learning can stimulate students' motivation and emotional involvement, leading to greater enthusiasm in the learning process.

Overall, the findings of this study demonstrate that the *Bumi Bercerita* ethnomathematics-based module is effective in improving elementary students' mathematical literacy skills, both in general and across specific indicators. These findings strengthen previous research suggesting that mathematics instruction linked to local cultural contexts can enhance students' mathematical thinking, conceptual understanding, result interpretation, and solution evaluation skills. Furthermore, the use of ethnomathematics-based modules also contributes to creating a fun and meaningful learning atmosphere, thereby improving students' positive attitudes toward mathematics.

CONCLUSION

Based on the results of the research conducted, it can be concluded that the use of the *"Bumi Bercerita"* ethnomathematics-based module has a significant effect on improving the mathematical literacy skills of fifth-grade students at SDN 106161 Laut Dendang. The results of the independent sample t-test indicated a significant difference in post-test scores between the experimental and control classes, with a greater increase observed in the experimental class. Specifically, the improvement covered four indicators of mathematical literacy: the ability to formulate problems, apply concepts, interpret results, and generate solutions, with the highest improvement observed in the *"applying concepts"* indicator. Scientifically, these findings affirm that an ethnomathematics-based learning approach presented in a narrative and contextual form can effectively optimize students' conceptual understanding and enhance their critical and reflective thinking skills. In addition to reinforcing previous findings regarding the effectiveness of ethnomathematics in elementary mathematics education, this study also introduces the narrative module approach as an innovation in learning media development that fosters students' positive attitudes toward mathematics. The results of the questionnaire showed that students in the experimental group displayed more enthusiastic, motivated, and active attitudes compared to those in the control group, indicating the module's contribution to the affective domain of learning. However, this study does have several limitations. It was conducted at only one school with a relatively small sample size, which limits the generalizability of the findings. Variations in students' backgrounds including age, gender, and social environment were not included as comparative variables in the analysis. Therefore, further research is recommended to involve a larger and more diverse population and to consider additional variables in order to gain a more comprehensive understanding of the effectiveness of ethnomathematics-based approaches in elementary mathematics education.

REFERENCES

Aristya, Y., Ramadhana, R. S., & Rusli, M. (2025). Pengembangan modul ajar berbasis etnomatematika Minangkabau untuk meningkatkan kemampuan koneksi matematis siswa. *Jurnal Pendidikan Matematika Malikussaleh, 5*(1), 158–169.

Astuti, D., Wibawa, S., & Zulfiati, H. M. (2024). Pengembangan e-modul berbasis etnomatematika untuk mengembangkan keterampilan literasi numerasi di sekolah dasar. *Tuladha: Jurnal Pendidikan Dasar, 3*(2), 115–127.

Creswell, J. (2020). *Desain Penelitian: Pendekatan Metode Kualitatif, Kuantitatif, dan Campuran (edisi ke-4).* Thousand Oaks: CA: Publikasi Sage.

Fatmawati, I., & Hanik, U. (2024). Penerapan modul ajar matematika berbasis etnomatematika tradisi Nyadran Sidoarjo. *Jurnal Basicedu, 8*(1), 806–814.

Febriyanti, D. A., & Ain, S. Q. (2023). Pengembangan modul matematika berbasis etnomatematika pada materi bangun datar di sekolah dasar. *Jurnal Basicedu, 5*(3), 933--945.

Khatimah, H., & Fatimah, N. (2023). Pengembangan LKPD Etnomatematıka Berbasıs Rme Untuk Meningkatkan Lıterası Matematıka Sıswa. *Jurnal Elementaria Edukasia, 6*(4), 1680–1686. doi:10.31949/jee.v6i4.7115

Lestari, P., Dwijayanti, I., & Siswanto. (2023). Pengembangan Perangkat Pembelajaran Pbl Bermuatan Etnomatematika Untuk Meningkatkan Kemampuan Literasi Matematika Pada Peserta Didik Kelas V Sd. *Didaktik : Jurnal Ilmiah PGSD STKIP Subang, 9*(1), 328–34.

Mardianto, Anas, N., B. S., & Sadat, M. (2021). Strategi dan Media Pembelajaran Pendidikan Agama Islam di Era Pandemi Covid-19. *Fitrah: Jurnal Pendidikan Islam, 2*(1), 13–24. doi:10.53802/fitrah.v2i1.56

Maulida, S. H., Jatmiko, J., & Katminingsih, Y. (2020). Pengembangan modul matematika berbasis etnomatematika dengan tema permainan tradisional engklek. *Journal of Science and Education, 1*(1), 1–7.

Nur, N., Lubis, H., Amalia, A., Sitepu, S., & Wandini, R. (2023). Analisis Kemampuan Berpikir Kreatif pada Pembelajaran Matematika dengan Penerapan Model Drill. *Edu Society: Jurnal Pendidikan, Ilmu Sosial Dan Pengabdian Kepada Masyarakat, 1*(3), 369–378.

Nurlaila Sapitri, S. N. (2023). Textbook Analysis of Al-ʿArabiyyah Baina Yadai Aulādinā Vol 1 in The Rusydi Ahmad Thuaimah's Perspective. *Asalibuna, 7*(01), 1-13. doi:10.30762/asalibuna.v7i01.1053

Priyani, N. E. (2022). Pengembangan modul etnomatematika berbasis budaya Dayak dalam pembelajaran matematika. *Jurnal Didaktika Pendidikan Dasar, 5*(1), 226-235.

Putri, R. I., & Iskandar, T. (2023). Pengembangan Modul Fikih Berbasis Inquiry Learning Di Kelas Viii Madrasah Tsanawiyah Negeri Ii Mandailing Natal. *Edu Global: Jurnal Pendidikan Islam, 4*(1), 54-62. doi:10.56874/eduglobal.v4i1.1159

Rahmadani, A., & Wandini, R. (2024). Miskonsepsi Pemahaman Materi Bangun Datar Dengan Penerapan Teori Polya Di PGMI 3 UINSU Jurnal Teknologi Pendidikan Dan Pembelajaran. *Jurnal Teknologi Pendidikan Dan Pembelajaran (JTPP), 1*(3), 401–404.

Rahmasari, I., & Setyaningsih, N. (2023). Kemampuan Literasi Matematika Siswa dalam Memecahkan Soal Cerita Berdasarkan Langkah Polya pada Materi SPLDV Ditinjau dari Gaya Kognitif. *Jurnal Cendekia : Jurnal Pendidikan Matematika, 7*(2), 1773–1786. doi:10.31004/cendekia.v7i2.2402

Ratriana, D., Purwoko, R. Y., & Yuzianah. (2020). Pengembangan e-modul berbasis etnomatematika nilai budaya Islam untuk SMP. *AlphaMath, 7*(1), 11–19.

Sahputra, H. Y. (2024). Pemanfaatan Media Sosial Sebagai Sarana Pendukung Keberhasilan Pendidikan Di SMP Bumi Qur'an Siantar. *Jurnal Mudarrisuna: Media Kajian Pendidikan Agama Islam, 14*(4), 476-487. doi:10.22373/jm.v14i4.24509

Siloto. (2023). Pengembangan Modul Ajar Berbasis Kurikulum Merdeka Pada Materi Bentuk Aljabar Di Kelas Vii Smp Negeri 13 Medan. *THT , 4*(2), 194–209. doi:10.36655/sepren.v4i02.1155

Siregar, N. (2022). Kemampuan Pemecahan Masalah Matematis Mahasiswa PGMI Pada Materi Volume Bangun Ruang. *Jurnal Derivat: Jurnal Matematika Dan Pendidikan Matematika, 9*(2), 113–122. doi:10.31316/jderivat.v9i2.2711

Sugiyono. (2022). *Metode Penelitian Kuantitatif, Kualitatif, Dan R&D*. Bandung: CV. Alfabeta.

Surat, I. (2018). Peranan Model Pembelajaran Berbasis Etnomatematika sebagai Inovasi Pembelajaran dalam Meningkatkan Literasi Matematika. *Jurnal Pendidikan Matematika Dan Sains, 7*(2), 143–154. doi:10.5281/zenodo.2548083

Topan Iskandar, U. K. (2023). *Filsafat Manajemen Pendidikan Islam: Telaah manajemen Pendidikan dari Sudut Pandang Filsafat Islam.* Nganjuk: DEWA PUBLISHING.

Umi Kalsum, P. S. (2023). *Isu-Isu Kontemporer*. Jambi: PT. Sonpedia Publishing.

Witha, T., Karjiyati, V., & Tarmizi, P. (2021). Pengaruh Model RME Berbasis Etnomatematika Terhadap Kemampuan Literasi Matematika Siswa Kelas IV SD Gugus 17 Kota Bengkulu. *JURIDIKDAS: Jurnal Riset Pendidikan Dasar, 3*(2), 136–143. doi:10.33369/juridikdas.3.2.136-143

Yusnaldi, E. N. (2024). Pendidikan Multikultural Di Sekolah Dasar. *Jurnal Pendidikan Inovatif , 6*(1), 456–463.