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PROFILE OF STUDENTS' MATHEMATICAL CONNECTION IN SOLVING ETHNOMATHEMATICS PROBLEMS IN TERMS OF HIGH MATHEMATICAL ABILITY

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Abstract:
Mathematical connections are one of the five standards in mathematics learning and must have by students in the 21st century. Mathematics learning using culture (ethnomathematics) has a positive impact on students' mathematical understanding. Therefore, this research focuses on students' mathematical connections in solving ethnomathematics problems in terms of high mathematical abilities. This research aims to describe students' mathematical connections in solving ethnomathematics problems in terms of high mathematical abilities. This type of research is descriptive qualitative research. The subjects of this research were four mathematics education students at UIN Sunan Ampel Surabaya who had the highest Grade Point Average (GPA) of more than 3,5. Data was collected through written tests and interviews. The written test was used to reveal students' mathematical connection skills in solving Arek culture ethnomathematics problems. The interview used data triangulation by comparing students' answers when completing the test with what is revealed and deepening the results of the written test if there is something that needs to be confirmed. Next, the data is grouped and analyzed according to mathematical connection indicators. Based on the results of this analysis, it was found that the mathematical connections of students who had high mathematical abilities in solving ethnomathematics problems were in the less and very less categories. Meanwhile, the types of mathematical connections in the four subjects in solving ethnomathematics problems are procedural connections, comprehension connections, and equivalent representation connections.

Keywords: Ethnomathematics, Mathematical Connection Ability, Higher Mathematics Ability, Problem Solving

PROFIL KONEKSI MATEMATIKA MAHASISWA DALAM MENYELESAIKAN MASALAH ETNOMATEMATIKA DITINJAU DARI KEMAMPUAN MATEMATIKA TINGGI

Abstrak:
Koneksi matematika adalah salah satu dari lima standar pada pembelajaran matematika dan harus dimiliki oleh peserta didik di abad 21. Pembelajaran matematika menggunakan budaya (etnomatematika) berdampak positif terhadap

pemahaman matematis peserta didik. Oleh karena itu, penelitian ini berfokus pada koneksi matematika mahasiswa dalam menyelesaikan masalah etnomatematika ditinjau dari kemampuan matematika tinggi. Tujuan dari penelitian ini adalah mendeskripsikan koneksi matematika mahasiswa dalam menyelesaikan masalah etnomatematika ditinjau dari kemampuan matematika tinggi. Jenis penelitian ini adalah penelitian kualitatif deskriptif. Subjek penelitian ini yaitu 4 mahasiswa pendidikan matematika UIN Sunan Ampel Surabaya yang memiliki Indeks Prestasi kumulatif (IPK) lebih dari 3,5. Data dikumpulkan melalui metode tes tulis, dan wawancara. Tes tulis digunakan untuk mengungkap kemampuan koneksi matematis siswa dalam menyelesaikan permasalahan etnomatematika budaya Arek. Sedangkan wawancara sebagai triangulasi data dengan cara membandingkan jawaban siswa saat menyelesaikan tes dengan apa yang diungkapkan dan sebagai pendalaman hasil tes tulis jika ada sesuatu yang perlu dikonfirmasi. Selanjutnya data dikelompokkan dan dianalisis sesuai dengan indikator koneksi matematika. Berdasarkan hasil analisis didapatkan bahwa koneksi matematika mahasiswa yang memiliki kemampuan matematika tinggi dalam menyelesaikan masalah etnomatematika berada pada kategori kurang dan sangat kurang. Sedangkan jenis koneksi matematika pada keempat subjek tersebut dalam menyelesaikan masalah etnomatematika yaitu koneksi prosedural, koneksi pemahaman, dan koneksi representasi yang setara.

Kata Kunci: Etnomatematika, Kemampuan Koneksi Matematika, Kemampuan Matematika Tinggi, Penyelesaian Masalah

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INTRODUCTION

Mathematical connections are one of the five standards in mathematics learning proposed by the National Council of Teachers of Mathematics (NCTM) and are expected to be possessed by students in the 21st century (NCTM, 2000). Through mathematical connections, students can solve mathematical problems and apply them to everyday life (Ulya, Irawati, & Maulana, 2016). This is by the nature of mathematics, where each topic is interrelated. Apart from that, mathematics cannot be separated from other scientific disciplines and problems that occur in everyday life (Siagian, 2016). Learning will be more meaningful if students can build and apply their knowledge to solving problems in the surrounding environment (Xenofontos, Alkan, & Andrews, 2022).

Fani and Effendi (2021) revealed that in general students' mathematics connections are still low. Low students' mathematical connections will affect the quality of students' learning which results in low achievement at school (Fani & Effendi, 2021). Mathematical connections are a skill that must be built and learned because having good mathematical connection skills will help students understand the relationship between various concepts in mathematics and apply mathematics in everyday life (Utari & Hartono, 2019).

According to Tasni and Susanti, (2017), there are seven types of connections that students make while solving verbal problems. These include comprehension connection, if-then connection, equivalent representation connection, hierarchical connection, comparison connection, equivalent connection, procedural connection, and justification and representation connection. The comprehension connection is built when the student can identify the known and unknown elements in the problem and determine the concepts and procedures that will be used to solve it. The if-then connection is made when the student uses direct verbal analysis to solve problems based on the conclusion of given information. The pieces of information are seen as a premise of inference. The equivalent representation connection is built based on concepts that are represented in different ways and forms but have the same value. The hierarchical connection is established based on the hierarchical relationship between two concepts, where one concept is a component of another concept. The comparative connection through a common form is established based on the comparison of the forms of two concepts that have similarities. The procedural connection is built based on the use of a specific method or procedure to solve a problem. The justification and representation connection is established when the student can explain and represent the solution process.

Julaeha, Mustangin, and Fathani (2020) in their research also stated that students with high mathematical abilities were unable to meet the mathematical connection indicators, students with moderate mathematical abilities were able to fulfill 2 of the 3 indicators of mathematical connections, and students with low abilities were also unable to meet the mathematical connection. So it can be concluded that mathematical connection abilities are not linear with students' mathematical abilities. However, according to research by Aliyah, Yuhana, and Santosa (2019), it shows that students who have high initial mathematical abilities also have high mathematical connection abilities. Therefore, further research is needed on mathematical connections at the tertiary level to support or reject this conclusion.

Implementation of mathematical connection abilities will not be realized if there are no objects that can be used as material to improve mathematical connection, an example of such an object is culture (Ulya, Irawati, & Maulana, 2016). The culture referred to here is real culture, namely the culture that lives in Indonesian society. Culture and education have a very close relationship, complement and support each other. With education, people can transmit culture from generation to generation and hope for the realization of a better culture in the future (Sirate, 2012).

Culture-based mathematics learning is known as ethnomathematics (Nur, Kartono, Zaenuri, Waluya, & Rochmad, 2020). Ethnomathematics is a part of culture that is developed through daily activities (Noto, Firmasari, & Fatchurrohman, 2018). Ethnomathematics can be a bridge between mathematics and everyday life (Andriyani & Kuntarto, 2017). The process of finding and identifying mathematical objects through cultural relics will make it easier to understand mathematics. The use of ethnomathematics makes it easier for students to understand the concepts or material being studied, this is because learning is directly linked to their culture which is a daily activity in their environment (Sirate, 2012).

The study of ethnomathematics in mathematics learning covers all fields, but this research discusses the ethnomathematics of the Arek culture in the East Java region, of Indonesia. According to Sutjipto Tjiptoatmodjo, the East Java region is divided into 4 cultures, namely the Mataram, Pandalungan, Madura Island, and Arek cultures (Yunas & Isbahi, 2018). Arek culture has had a very broad influence because it was the site of large kingdoms that colored cultural relations in East Java, as well as Java and the archipelago in general. Ten kingdoms in East Java in the Arek cultural area, such as the Singasari, Panataran, Kanjuruhan, Kahuripan, Majapahit, Blambangan, and Medang kingdoms, left buildings in the form of temples and inscriptions. Carving motifs in the construction of temples and inscriptions from the Arek cultural heritage are found in all-natural expressions, which are expressed in geometric concepts.

It is necessary to introduce local culture to students so that the original culture in the surrounding area remains sustainable and to strengthen local wisdom in mathematics learning (Chrissanti, 2019). One way to introduce Arek culture to students is by linking mathematical concepts with Arek culture or providing Arek culture ethnomathematics problems in mathematics learning evaluations (Sirate, 2012). Apart from that, ethnomathematics is seen as a new model for learning, to bring out the character of love for local culture (Andriyani & Kuntarto, 2017).

There are some studies about mathematical connections (Aini, Purwanto, & Sa'dijah, 2016; Aliyah, Yuhana, & Santosa, 2019; Apriyono, 2016; Fani & Effendi, 2021; Firdausi, Inganah, & Rosyadi, 2018; Karim & Sumartono, 2015; Yuniawatika, 2018). Firdausi, Inganah, and Rosyadi (2018) researched junior high school students' mathematical connection abilities in terms of learning styles in solving mathematics problems. Apriyono (2016); Karim and Sumartono (2015); Yuniawatika (2018) research about mathematical connections in solving mathematical problems in terms of gender. Fani and Effendi (2021) research mathematical connections in solving mathematical problems in terms of mathematics anxiety. Aini, Purwanto, and Sa'dijah (2016); Aliyah, Yuhana, and Santosa (2019) research on mathematics connection is viewed from early mathematics abilities and gender. The difference between this research and previous research is in the mathematical problems and research subjects. The mathematical problems studied in this research focus on ethnomathematics problems of the Arek culture and the research subjects in this research are research subjects is mathematics education students who have high GPAs.

Julaeha, Mustangin, and Fathani (2020) research, it was found that students' mathematical connection abilities in solving mathematical problems were in the low category. In research by Sudirman, Cahyono, and Kadir, (2018), it was found that the mathematical connection abilities of Pesisir Middle School students were relatively low. The cause of the low mathematical connection ability of coastal junior high school students is the students' low understanding of mathematical concepts. Romli's (2017) research on mathematical connections among female high school students who have high mathematical abilities found that these students had high mathematical connection abilities.

Many ethnomathematics studies have been carried out (Sirate, 2012; Sochima, 2013). These studies show that mathematics learning related to local culture produces positive results in supporting students' understanding of mathematical concepts. This research focuses on cultural products as a medium for learning mathematics. Learning mathematics using an ethnomathematics approach can also improve student learning outcomes

(Ajmain, Herna, & Masrura, 2020; Nur, Kartono, Zaenuri, Waluya, & Rochmad, 2020). Contextual mathematics learning based on Arek cultural ethnomathematics can improve students' mathematical connection abilities (Fitria, 2019). Learning mathematics using ethnomathematics also has a positive impact on students' mathematical understanding (Rahmadhani, 2022). Meanwhile, in this research, the focus is on students' mathematical connection abilities in solving Arek cultural ethnomathematics problems in terms of high mathematical abilities.

One of the factors that influences student learning achievement is mathematics ability. This ability is a determining factor in the success of mathematics learning (Julaeha, Mustangin, & Fathani, 2020). Students cannot solve problems perhaps because the level of students' mathematical abilities is still lacking. Students must be able to connect what they have in their thinking structures in the form of mathematical concepts, with the problems they face (Akramunnisa & Sulestry, 2016). The high mathematical ability referred to in this research is the ability to master mathematical concepts which can be seen from students' GPA above 3,5 or including cum laude criteria. Therefore, the research aims to describe students' mathematical connection abilities in solving Arek cultural ethnomathematics problems in terms of high mathematical abilities.

METHODS

The type of research used in this research is descriptive qualitative research. This research was conducted in the Mathematics Education study program at UIN Sunan Ampel Surabaya (UINSA). This location was chosen by considering the Arek culture in the Surabaya and Malang area, East Java.

Subjects were taken in this research using purposive sampling. The research subjects chosen were based on high mathematical ability, namely four 6th semester mathematics education students who had the highest GPA above 3.5. The coding of research subjects and GPA criteria are presented in table 1 below.

Table 1. Research Subjects

Subject Initials	GPA in semester 6	Subject	Code
AK	3,56	Subject 1	S_1
INY	3,62	Subject 2	S_2
TM	3,67	Subject 3	S_3
RA	3,79	Subject 4	S_4

This research instrument uses a written test and interview guide. Researchers used written tests to reveal students' mathematical connection abilities in solving Arek culture ethnomathematics problems. The material chosen is geometry and this written test consists of 3 temple ethnomathematics problems because the Arek culture ethnomathematics chosen in this research is the shape of temples in the East Java area. The test is carried out using a time limit, this is because you need to know the categories of mathematical connections within a certain time limit. During this research, the research subjects were accompanied by researchers to maintain the authenticity of students' answers.

This interview process was recorded using cellphone recordings so that researchers could obtain accurate data. Interview questions were given to the 4 students who had the highest GPA and distributed after completing the math connection ability test. Because this technique cannot stand alone, but only as a support for students' work results on mathematical connection ability tests. The grid for the mathematical connection written test instrument is presented in table 2 below.

Table 2. Mathematical Connection Test Grid

No. Question	Basic Competency	Mathematical Connection Indicators	Operational Indicators Questions	Maximum Score
1.	Solving problems related to flat shapes	Able to use and apply the relationships between concepts in mathematics.	Applying concepts in solving mathematical problems using geometry	35
2.	Solving problems related to flat shapes	Able to use and apply mathematical concepts in everyday life	Describe the concept of the perimeter area of a flat shape by applying it to everyday life	30
3.	Solving problems related to flat shapes	Able to use and apply mathematics with other scientific disciplines	Using and applying mathematics with other disciplines regarding royal heritage (history)	35

The triangulation carried out in this research is technical triangulation, namely comparing the results of observations with data from interviews, and subject triangulation, namely comparing the results of tests on mathematical connection abilities between one student and another. The aim of collecting data using the interview method was to describe students' mathematical connection abilities in solving Arek cultural ethnomathematics problems and to triangulate data by comparing students' answers when completing tests with what was revealed.

The analysis technique used is an interactive analysis model, namely, there are three components consisting of: (1) data reduction, (2) data presentation, and (3) drawing conclusions or verification. Data reduction, namely carrying out analysis to emphasize, shorten, focus, remove things that are not important, and organize the data in such a way that conclusions can be drawn or main findings can be obtained. Presentation of data in this research includes classification and identification of data, namely writing an organized and categorized collection of data so that it is possible to conclude the data. The presentation of data from this research is students' mathematical connections in solving ethnomathematics problems of Arek culture. The range of mathematics connection ability test scores based on connection categories is presented in table 3 below (Ayu & Rochmad, 2022).

Table 3. Mathematical Connection Categories

No.	Mathematical Connections Test Score Range	Category
1	$85 \leq total\ score \leq 100$	Very well
2	$70 \leq total\ score < 85$	Good
3	$60 \leq total\ score < 70$	Enough
4	$45 \leq total\ score < 60$	Less
5	$0 \leq total\ score < 45$	Very Less

This research concludes that it is a new finding that has never existed before so a relationship, hypothesis, or theory is obtained. Based on the data that has been presented, researchers conclude students' mathematical connection in solving ethnomathematics problems of Arek culture in terms of high mathematical abilities.

RESULTS AND DISCUSSION

Before being used in data collection, this research instrument was validated by 2 validators, namely 1 mathematics lecturer at Airlangga University and 1 mathematics education lecturer at UIN Sunan Ampel Surabaya. Both validators stated that the mathematical connection ability test and interview were declared feasible, however, there were revisions including the connection with other mathematical concepts was still lacking, and in question number 3 there needed to be clarity in the image, for example, the statement that all the trapezoids that appeared were isosceles. After receiving input from the validator, the researcher immediately revised this research instrument and returned it to the validator to check the revised results again.

Data exposure for S_1, S_2, S_3, and S_4 was analyzed using a qualitative approach starting with data reduction, by reducing written test results and interview transcripts adjusted to mathematical connection indicators. Next, we present written test data and interview transcripts regarding the mathematical connections of the four research subjects in solving ethnomathematics problems. After presenting the results of the research on the four subjects, conclusions are then drawn. The following are the Arek Culture ethnomathematics problems in this research.

1. Pari Temple is an Indonesian classical heritage located in Candipari Village, Porong District, Sidoarjo Regency, East Java Province. Pari Temple consists of three parts, namely the foot, the body, and the roof. The foot section is in the form of a block with a length of 13,55 meters, a width of 13.40 meters, and a height of 1,50 meters. The body of the temple is a block with a length of 12 meters, a width of 7,8 meters, and a height of 6,30 meters. The entrance door is rectangular with a length of 2,90 meters, a width of 1,23 meters, and a thickness of 1 meter and has an engraving of the year 1293 saka. The roof of the temple is in the form of an isosceles trapezoidal prism with the length of the front parallel sides of 6 meters and 12 meters, the hypotenuse of the trapezoid of 5 meters and a height of 6 meters with decorations in the form of panjal towers. Andi wants to use a chemical solution to clean the mold on the Pari temple so that it looks good. The price of the chemical solution bought by Andi is Rp23.000 / bottle, and 1 bottle is used in 5 m^2, then the amount of money Andi spent to buy the chemical solution is ...
2. Jawi Temple is located at the foot of Mount Welirang, in Candi Wates Village, Prigen District, Pasuruan Regency. Jawi Temple was built by

order of the last king of the Singasari Kingdom, named Kertanegara, as a place of worship for Shiva Buddhists. Jawi Temple is also the repository of Kertanegara's ashes. Jawi Temple occupies a large rectangular area measuring 40 x 60 m^2, surrounded by a 2 m high brick fence. The temple building is located in the center of the property and is surrounded by a moat, which is currently decorated with lotus flowers, as shown in the picture below. If the width of the moat is 3 m, then the perimeter and area of the moat are ...

3. Singhasari Temple is one of the Hindu-Buddhist temples of the Singasari Kingdom, located in Candirenggo Village, Singosari District, Malang Regency, East Java, Indonesia. The temple is the shrine of the last Singasari king, King Kertanegara, who died in 1292. The temple is located in the valley between Mount Tengger and Mount Arjuno at an altitude of 512 meters above sea level. If the following Singasari Temple is composed of several flat shapes as shown in the following figure, then determine the cross-sectional area of the front view!

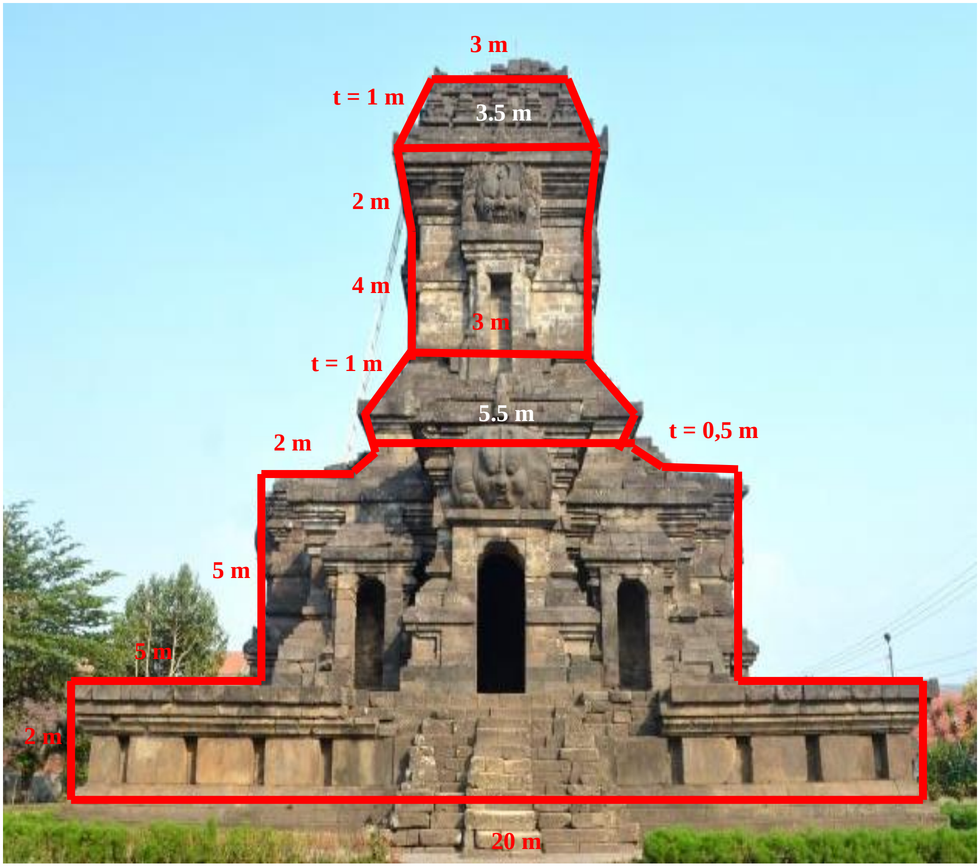

Figure 1. Singhasari Temple

The following is an example of written test results.

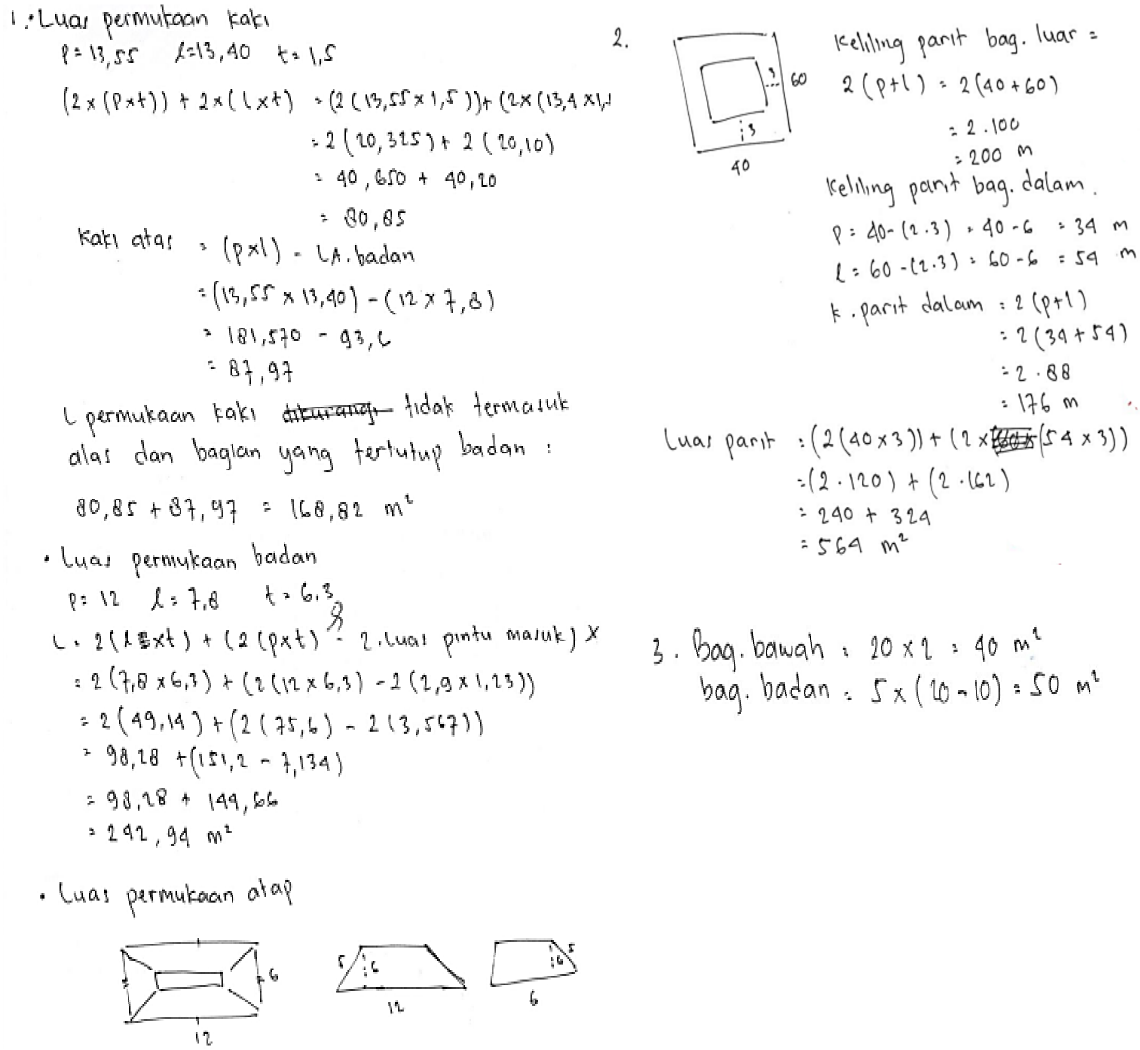

Figure 2. S_1's written answers in solving three ethnomathematics problems

The following is a transcript of the interview between Researcher (R) and Subject (S).

$S_{1.1}$: For the whole question, most of the questions are measuring area. There is surface area, then there are those who measure the perimeter and area of the ditch in number 2, so there are two measurements, namely perimeter, and area. Then in the final number, there is a building shape, then it is presented in the form of a flat shape. Then the task is to find the area of the flat shape that matches the shape of the E... building.

$R_{1.2}$: Good steps used by AK to solve the problem. How are you, son?

$S_{1.2}$: The steps I use I read quite a long time in the beginning because I understand the problem so what I do is the steps, how to choose the path, what should I do first, for E... I take the whole thing...I separate it first every part of it. Then after I separated it, I wrote E... what is the known length and width? Then I measured it and counted 1 by 1. I the area of each part, the bottom surface area, the body part, and the roof part then I added them up. Eee... and for the next question it's the same... almost the same, namely I need to read again what steps I have to take so that I can answer correctly like that ma'am.

$R_{1.3}$: OK. According to Mr. AK, maybe there are other topics outside of geometry, sir... that can be used to solve the problem in number one, sir. So, if you have finished question number one, bro, maybe there are other topics, right?

$S_{1.3}$: Another topic outside this geometry because E...what we are looking for is a surface area I think E...all I know is this geometry that we can...

$R_{1.5}$: So, according to AK, what number is there a relationship between the mathematical topics used? Is there question number 1, number 2, or number 3 where there is a connection between mathematical topics?

$S_{1.5}$: Relationships between mathematics topics.

$R_{1.6}$: Yes…

$S_{1.6}$: If in…. Number…. (while looking at the questions), I think number 2 is….

$R_{1.7}$: Yes?

$S_{1.7}$: That's, E..almost... well we can't get away from geometry we can only E... calculate. From, E... Suppose the linear equation with x is because here I use the formula 2 times the length plus the width for the circumference. I mean we can pair it with linear equations, for example, 2x, so x is the length plus the width of ee...a shape.

Based on the description above, the analysis of the mathematical connection abilities of S_1 subjects in solving Arek Culture ethnomathematics problems is shown in table 4 below.

Table 4. S_1 Mathematics Connections in Solving Arek Culture Ethnomathematics Problems

No.	Mathematical Connection Indicator	Data Analysis	Score
1.	Using and applying inter concepts in mathematics	In Figure 1, as well as the transcript of $S_{1,2}$'s interview above, S_1 is seen reading the questions well so that S_1 understands the meaning of problem number 1. The subject S_1 explained that in all three problems, he was asked to find the area of a flat shape. S_1 only calculated the surface area of the temple body, so it did not get the final answer correctly. S_1 did not write the answer until the end.	18
2.	Use and apply mathematical knowledge to everyday life.	Figure 1, as well as the transcript of the $S_{1.2}$ interview above, S_1 understands the meaning of problem number 2. The subject S_1 explains that the three problems are to find the perimeter and area of a flat shape. S_1 said that he felt that problem number 2 had other topics besides geometry, namely the topic of linear equations and geometry. S_1 does not experience difficulties but requires precise measurements.	30
3.	Using and applying mathematics with other scientific disciplines	In Figure 1, S_1 is seen reading the problem well so that S_1 understands the meaning of problem number 3. S_1 did not write down the answer until the end, S_1 only calculated the surface area of the temple body, so he did not get an answer end correctly. Based on the interview transcript $S_{1.14}$, S_1 experienced difficulties because he combined historical concepts with mathematical concepts so more detailed calculations were needed.	5
	Total Score		53

Based on table 4, it is found that of the three problems given, S_1 was only able to solve problem number 2 correctly and obtained a score of 30. In problem number 1, he was only correct when getting the area of the foot and body of the temple, while the area of the foot of the temple and the calculation of money where Andi needed to buy a bottle of chemical solution which was not answered and obtained a score of 18. Meanwhile, problem number 3, S_1 was not solved well so the correct solution was not obtained so a score of 5 was obtained. So it can be concluded that the total score of S_1 in solving the Kultur Arek ethnomathematics problem was 53, so S_1 is included in the category of lacking mathematical connection abilities.

The results of the research are based on data presentation and data analysis which are presented in Table 5 below and it can be concluded that the results of students' mathematical connection abilities in solving Arek Culture ethnomathematics problems in terms of high mathematical abilities are in the less and very less categories. The following is a comparison of students' mathematical connection abilities in terms of high mathematical abilities.

Table 5. Comparison of Students' Mathematical Connection Ability in Solving Arek Culture Ethnomathematics Problems

Subject	**Score of Mathematical Connection Ability in Solving Ethnomathematics Problems Arek Culture**			**Total Score**	**Category**	**Types of Connections**
	Problem 1	Problem 2	Problem 3			
S_1	18	30	5	53	Less	Procedural connection
S_2	14	7	8	29	Very less	Comprehension connection
S_3	16	9	0	25	Very less	Equivalent representation connection
S_4	15	30	4	49	Less	Equivalent representation connection

Based on table 5 above, it was found that there were 2 subjects in the less category, while the other 2 subjects were in the very less category. It can be concluded that the category of students' mathematical connection abilities in solving Arek Culture ethnomathematics problems is in the less and very less categories.

This is by research by Julaeha, Mustangin, and Fathani, (2020) that students' mathematical connection abilities in solving story problems with high mathematical abilities are in the low category because they do not meet any of the mathematical connection indicators. Meanwhile, Aini, Purwanto, and Sa'dijah (2016) stated that students with high mathematical abilities have more complete mathematical connection abilities compared to students with low mathematical abilities in solving problems.

Setyaningtyas and Susanah (2019) in this research stated that mathematical connections correlate with mathematical abilities. Based on the results of this research and the discussion, it was found that students' mathematical connections in solving ethnomathematics problems were the same as the categories of students' mathematical connections in solving mathematics story problems. This is because students are not accustomed to their teachers solving non-routine problems such as story problems, HOTS questions, or ethnomathematics problems so students experience difficulty in solving them (Julaeha, Mustangin, & Fathani, 2020). Apart from that, it is necessary to equip mathematics teachers with various strategies to be able to build students' mathematical connections in mathematics learning in the classroom, and classroom learning teachers need to train and familiarize students with linking concepts in mathematics and outside mathematics (Romli, 2017). Improvement of the mathematical connection ability of students who implement learning strategies based on local wisdom is better than the mathematical connection ability of students without learning strategies based on local wisdom (Asfar, Sumiati, Asfar, & Nurannisa, 2022).

CONCLUSION

By the results of the data presentation and research findings along with the discussion that has been presented, it is concluded that the mathematical connections of mathematics education students with the highest GPA in solving Arek Culture ethnomathematics problems are in the less and very less categories. The first indicator of mathematical connection is that students write their answers until the end and do not complete their answers until the end, but the answers they get are not correct. In the second indicator of mathematical connection, students wrote the answer to the end. In the third indicator of mathematical connection, students did not write the answer until the end. The types of mathematical connections in the four subjects in solving Arek Culture ethnomathematics problems are procedural connections, comprehension connections, and equivalent representation connections.

Suggestions that can be made based on the results of this research are that it is best to not be limited in time when solving ethnomathematics problems so that all problems can be solved well. Educators must familiarize their students with solving ethnomathematics problems so that their mathematical connections increase.

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