Profile of Student Problem-Solving Ability Based on Ethnomathematics of Ngawi Culture on Geometry Topics

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Wasilatul Murtafiah, Retno Dewi Anggreni, Titin Masfingatin, et al.

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Wasilatul Murtafiah[1, a)], Retno Dewi Anggreni[1, b)], Titin Masfingatin[1, c)], Marheny Lukitasari[2, d)], Nurcholif Diah Sri Lestari[3, e)], Muhammad Noor Kholid[4, f)]

[1]*Mathematics Education Department, Faculty of Teacher Training and Education, Universitas PGRI Madiun, Jalan Setiabudi No. 85 Madiun Indonesia*
[2]*Biology Education Department, Faculty of Teacher Training and Education, Universitas PGRI Madiun, Jalan Setiabudi No. 85 Madiun Indonesia*
[3]*Mathematics Education Department, Faculty of Teacher Training and Education, Universitas Jember, Jalan Kalimantan No. 37 Jember Indonesia*
[4]*Mathematics Education Department, Faculty of Teacher Training and Education, Universitas Muhammadiyah Surakarta, Gatak, Pabelan, Kec. Kartasura, Kabupaten Sukoharjo Indonesia*

[a)] *Corresponding author:* wasila.mathedu@unipma.ac.id
[b)]retnodewianggreni3@gmail.com
[c)]titin.mathedu@unipma.ac.id
[d)]marheny@unipma.ac.id
[e)]nurcholif.fkip@unej.ac.id
[f)]muhammad.kholid@ums.ac.id

Abstract. The low ability of students to solve problems is still an obstacle in mathematics education to date. Mathematical problems given to learning should be related to the context of everyday life, including culture known as ethnomathematics. This type of research is descriptive qualitative because it aims to describe the problem-solving abilities of students based on the ethnomathematics of Ngawi culture on the topic of Geometry. This research is a case study with one male and one female subject selected from 23 junior high school students in Ngawi, East Java, Indonesia. Data analysis was performed by reducing, presenting, and drawing conclusions and checking the validity of the data by using triangulation methods. The results showed that there were differences between the abilities of male and female students in solving problems based on the ethnomathematics of Ngawi culture on the topic of Geometry. Male students are better at understanding problems based on Ngawi's ethnomathematics than female students. When planning and solving problems based on the ethnomathematics of Ngawi culture, male students also appear to be more detailed in explaining each step of the solution. Male students can check completion well than female students. From the results of this study, it can be suggested that junior high school mathematics teachers can design ethnomathematics-based problems that are more varied according to the culture of the students' environment.

INTRODUCTION

Problem solving is one of the skills that students should have because it is a 21st century skill [1]. Problem solving is also a high level of thinking skills [2], indispensable in the face of the progress of the times [3]. Problem solving is a complex cognitive activity that requires a high level of thought process and full of strategies to be able to solve it [4]. Problem solving skills should be provided to students to train students in dealing with the problems of daily life. Problem solving requires students to use the skills and competencies they acquire through education and life experience [5].

Subjects that teach problem solving for students are one of them are math subjects. During this time students tend to choose to solve problems in an easy way that just wants to know the end result instantly without knowing the

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processes that must be passed. The OECD/PISA examines students' capacity to effectively analyze, reason and communicate mathematical ideas as they submit, formulate, solve and interpret math problems in a variety of situations [6]. In learning activities, the level of ability of students in solving mathematical problems is relatively low, so good handling is required to find solutions for students' mathematical abilities [7]. Mathematical problem solving pattern has been a problem with difficult and complicated calculations, therefore there needs to be a new paradigm in solving innovative and creative mathematical problems to facilitate concrete understanding to the abstract, namely through culture [8].

Learning activities by collaborating math problems with culture are expected to be one of the new alternatives in solving problems both in the school environment and in daily life. Innovations in the integration of learning that associate mathematics with local wisdom or cultural content are called ethnomatematics [9]. Learning mathematics on a cultural basis or context is expected to increase students' knowledge and love for cultural diversity. Through a cultural context close to the student, the student can apply the mathematical concepts he or she learns to the problems around the students [10][11]. Just like middle school students living in Ngawi, East Java, Indonesia, they can learn to solve problems through the cultures in the area.

One of the math problems that suits the cultural context of the area and is considered difficult for students is the problem on the topic of Geometry [12]. These Geometry topics include measurement, plane and solid [13], which is certainly in accordance with the cultural context in Ngawi, East Java, Indonesia such as buildings and places that become the description of the area. The provision of math problems based on Ngawi cultural ethnomatematics is one of the innovations that can be done to know how students' ability to solve problems. Mathematical problems on the topic of Geometry are designed using the context of one of the buildings that is characteristic of the city of Ngawi, namely the building that supports buffalo plowing in the fields which is the culture of the farming community in Ngawi.

In solving mathematical problems there are certainly differences between students, one of which is when viewed from the gender of male and female students. Gender or gender differences are a differentiating factor if male and female students are faced with problem-based problems, the way of thinking and determining problem solving is also different [14]. Previous research on contextual math problem solving ability shows indications of differences in ability between men and women [12]. This needs to be studied more deeply in relation to the ability of male and female students in solving ethnomathematical-based mathematical problems.

Studies on ethnomatematics have been conducted by several researchers. Balamurugan has studied the concept of ethnomatematics and its usefulness from a multicultural perspective as well as its application in the school curriculum for mathematics learning [15]. Utami, Sayuti & Jailani examines numerical values such as number base, residual theorem, modulo, and concostity modulus in formal mathematics, which are associated with matchmaking using Javanese Primbon [16]. Maryati & Prahmana shows kebaya kartini design activities with mathematical concept, such as angle, measure, and integer operations [17]. Suwarno, Lestari &Murtafiah (2020) explores and describes ethnomatematics in tobacco farming community activities in Jember, Indonesia [18].

From the description and the results of the above research shows that there are still no researchers who study about students' ability to solve problems based on Ngawi cultural ethnomatematics on the topic of Geometry when viewed based on gender differences. The results of this study will provide an overview of the differences in the ability of male and female students in solving ethnomatematic-based problems. In addition, these results will also provide recommendations for teachers and prospective teachers in designing learning tools with ethnomathematics contexts in order to improve students' ability to solve math problems.

METHOD

Research Type and Subject

This type of research is descriptive qualitative because it aims to describe the problem-solving abilities of students based on the ethnomathematics of Ngawi culture on the topic of Geometry. The subject of this study was selected from 23 grade VIII junior high school students in Ngawi, East Java, Indonesia. Of the 23 students there were 9 male students and 14 female students. This research is a case study research with one male and one female research subject. Each of these research subjects was chosen because they have mathematical scores above the minimum completeness criteria and have good oral communication skills. One male and one female selected were then revealed their abilities in solving ethnomathematics-based problems. The two students since birth have lived and attended school in Ngawi, East Java, Indonesia.

Data Collection and Analysis

The data of this study consists of ethnomathematics-based problem solving test data and interview data. Data collection was conducted by providing math problems based on Ngawi cultural ethnomathematics to 23 junior high school students in Ngawi, East Java, Indonesia.

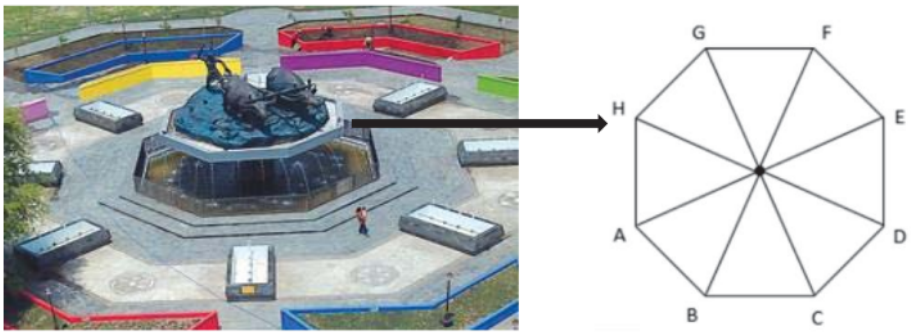


FIGURE 1. *Dungus Park in Ngawi City and Its Sketches*

Dungus Park is a park built by the Ngawi Regency Government with the theme of a statue of a farmer plowing rice fields with buffalo. This means that most of Ngawi area is an agricultural area with its inhabitants working as farmers. The statue of buffalo and farmer is supported on a field in the form of an irregular octagon like Figure 1 above. If the sketch is made on a scale of 1:20 then the length of GB is 16 cm and the length of AB is 6 cm.

a. *Determine the circumference of an irregular octagonal build ABCDEFGH*
b. *Specify the area of the irregular triangle ABC*
c. *What builds can form irregular octagons? How is the relationship between the buildings ?*
d. *Determine the area and circumference of the circle that can be formed by the irregular octagon to the maximum!*

Data analysis was performed by reducing, presenting, and drawing conclusions and checking the validity of the data by using triangulation methods. Data analysis is conducted based on ethnomathematics-based problem solving capability indicators as in Table 1 below [19].

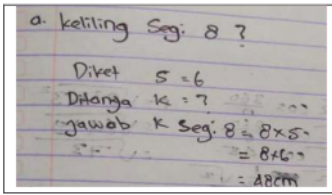
TABLE 1. *Ethnomathematics Based Problem solving Indicators*

No	Ethnomatematics-based Problem solving Aspects	Indicator
1	Understanding problem-based ethnomatematics	– Students mention what information is known in the context of the question – Students can explain what is known, what is asked on ethnomatematics-based issues
2	Create an ethnomathemtics-based problem solving plan	– Students show a connection between what is known and what is asked on ethnomatematics-based issues – Students create ethnomathematics-based problem solving plans
3	Implementing ethnomathematics-based problem solving plans	– Students implement ethnomathematics-based problem solving plan – Students associate known information with previously learned knowledge
4	Reheck problem solving	– Students re-examine ethnomathematics-based problem solving results

No	Ethnomatematics-based Problem solving Aspects	Indicator
		– Students make conclusions based on ethnomathematics-based problem solving results obtained

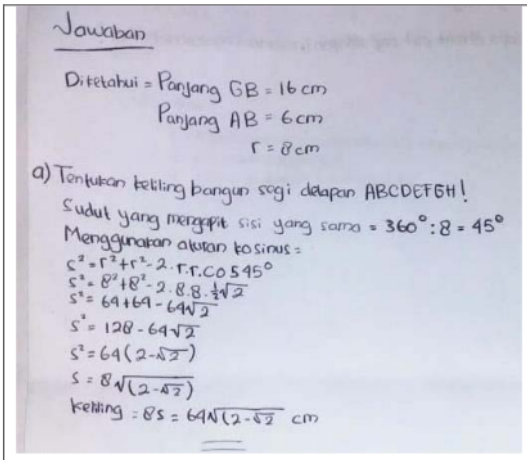
RESULT AND DISCUSSION

Based on the results of problem solving based on Ngawi cultural ethnomatematics by grade 8 students at SMPN 2 Kwadungan Ngawi, it can be known that there is a difference in settlement between male and female students. Of the 23 students who have been given math problems based on ethnomatematics, then selected 1 problem-solving result of male students hereinafter called BS and 1 male student solving results hereinafter called GS. Each of the results of the completion of the two students is presented starting from the answer to questions a to d as follows.



Translation:
What is the perimeter of octagonal?
Is known: side = 8
Asked: circumference of octagonal
Answer: circumference of octagonal = 8 × side
= 8 × 6
= 48cm

FIGURE 2. Results of ethnomatematic-based problem solving problem a (roving octagonal) by BS



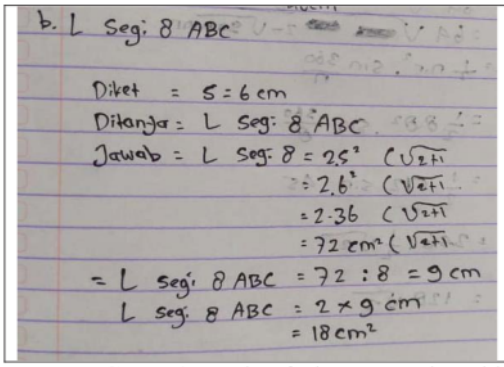
Translation:
In known: GB length = 16 cm
AB length = 6 cm
r = 8 cm
Determine the circumference of the octagonal build ABCDEFGH!
Angles that flank the same side $= 360°: 8 = 45°$
Using cosine rules:
$s^2 = r^2 + r^2 - 2.r.r.\cos 45°$
$s^2 = 8^2 + 8^2 - 2.8.8.\frac{1}{2}\sqrt{2}$
$s^2 = 64 + 64 - 64\sqrt{2}$
$s^2 = 128 - 64\sqrt{2}$
$s^2 = 64(2 - \sqrt{2})$
$s = 8(2 - \sqrt{2})$
Circumference = 8s = $64(2 - \sqrt{2})cm$

FIGURE 3. Results of ethnomatematic-based problem solving problem a (roving octagonal) by GS

Based on the results of the settlement in Figures 2 and 3 above it can be known that BS has different problem solving with GS.BS can understand, plan and solve problems well. From the results of the interview shows that BS can also check the results of the completion, "BS states that so the circumference in terms of 8 is 48 cm".Unlike GS, he is less able to understand the ethnomatematic problems presented because it mentions inappropriate information.GS is less able to design, resolve and re-examine problems. It was also reinforced by the results of the interview, GS stated "I did not double-check my answer, because I forgot the formula".The results showed that BS looked more creative in planning problems, while GS looked neater in writing down steps to solve problems even though the results were wrong.

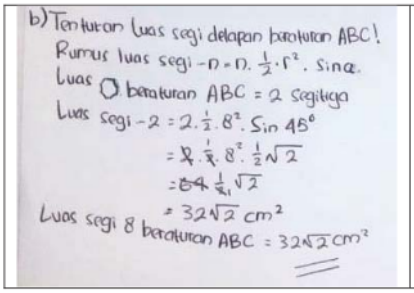
Students' ability to solve math problems can be seen from the steps of solving them. The steps to solve math problems according to Polya are to understand the problem, make a plan, execute a plan, and look back at the results obtained [20]. The difficulties experienced by students in solving problems include inability to read problems, lack of understanding of problems, errors in interpreting conditions in problems, inaccuracies in strategies used, inability to

translate problems in mathematical form, errors formulating from mathematical forms, errors interpreting concepts, miscalculations and imperfections about mathematical knowledge [21].



Translation:
The area of the ABC's octagon!
Known: side 6cm
Asked: the area of the ABC's octagon
Solution: the area of the octagon $= 2.s^2\left(\sqrt{2+1}\right)$
$= 2.6^2\left(\sqrt{2+1}\right)$
$= 2.36\left(\sqrt{2+1}\right)$
$= 72cm^2\left(\sqrt{2+1}\right)$
the area of the ABC's octagon $= 72:8 = 9\ cm$
$= 2\ \times 9cm$
$= 18cm^2$

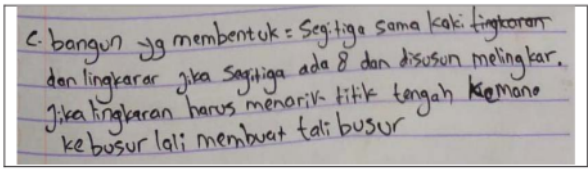
FIGURE 4. Results of ethnomatematic problem solving problem b (area of octagonal) by BS



Translation:
Determine the area of the ABC's octagon!
$n - faceted\ broad\ formula = n.\frac{1}{2}.r^2.\sin\alpha$
$ABC's\ irregular\ octagonal\ area = 2\ triangles$
$side - 2\ area = 2.\frac{1}{2}8^2.\sin 45°$
$= 8^2.\frac{1}{2}\sqrt{2}$
$= 32\sqrt{2}cm^2$

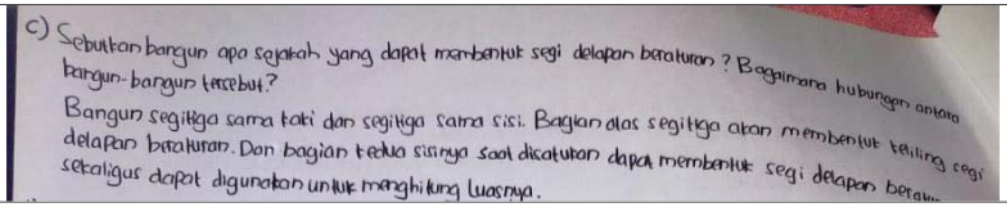
FIGURE 5. Results of ethnomatematic problem solving problem b (area of octagonal) by GS

And the next, figures 4 and 5 show that the difference in ethnomatematic problem solving between BS and GS. The difference is seen from the understanding, planning, completion and re-checking of the area of the octagon. BS can understand ethnomatematics-based problems because it can explain what is known, what is asked. BS already has a completion plan that is to first calculate the area of the octagon as a whole then divide it by 8 so that it is obtained the area of each triangle then multiply by 2 which means that ABC triangle is a combination of 2 triangles. The plan is not resolved properly because there is still an error, namely in the written formula $\sqrt{2+1}$ but at the end of the answer the calculation is not written. Unlike GS, he is less able to understand ethnomatematic problems well because he does not convey information correctly. GS writes the plan using a large angular formula with sine rules, but it cannot complete it. BS and GS did not recheck the answer. The results showed that girls made significantly more mistakes regarding space, the use of irrelevant formulas and incorrect selection of operations. Whereas boys significantly make a lot of mistakes in the final results of calculations and inferences [22].



Translation:
Build that form an equilateral triangle and a circle if there are 8 and arranged circularly. If the circle has to pull the middle point where to the arc then make a chord.

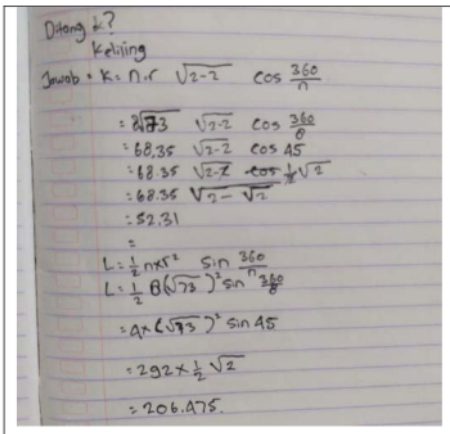
FIGURE 6. Results of ethnomatematic-based problem solving problem c (build that forms octagonal) by BS



Translation:
Build an equilateral triangle and an equilateral triangle. The triangular base will form the circumference of the irregular octagon and the two sides when put together can form an irregular octagon at the same time it can be used to calculate its area.

FIGURE 7. Results of ethnomatematic-based problem solving problem c (build that forms octagonal) byGS

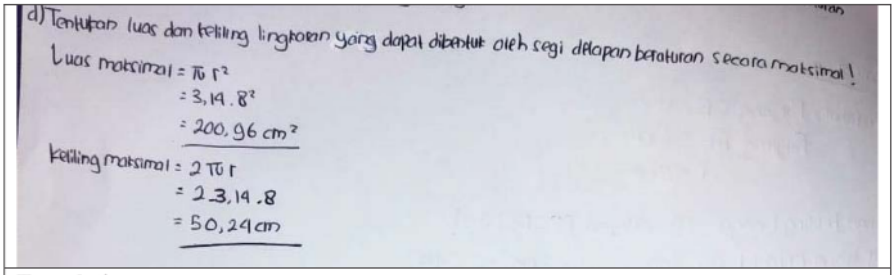
Based on the results of the completion in Figures 6 and 7 above it appears that BS and GS have differences in identifying the builds that make up the 8th facet.BS understands, plans and solves problems well. He mentions that the 8th triangle is formed from triangles and circles.From the results of the interview BS mentioned that "if he prefers to make an irregular 8 facet of a circle then it should be divided into 8 equally large sections and made bow ropes for each triangle formed".This is in contrast to GS, he mentions that the 8th triangle is formed from an equilateral triangle and an equilateral triangle.GS said that "to create an octagon can be done by combining 8 equilateral triangles or 8 isosy triangles".GS does not appear to be rechecking because it does not pay attention to the size of the triangle so it could be that if combined it will not form an irregular octagon.This condition indicates that there is a difference in linking known information with previously learned knowledge.This is in line with the statement that from the age of 11, men and women tend to differ in math and spatial abilities where boys are superior to girls due to physical differences in the brain [22].



Translation:
Asked: circumference..?
Area ..?
Answer:

$$k = \pi.r.\sqrt{2-2}\cos\frac{360}{n}$$
$$= 8\sqrt{73}.\sqrt{2-2}\,cos\frac{360}{8}$$
$$= 68{,}35.\sqrt{2-2}\,cos\,45$$
$$= 68{,}35\sqrt{2-\sqrt{2}}$$
$$= 52{,}31$$
$$l = \frac{1}{2}\pi x r^2.\sin\frac{360}{n}$$
$$= \frac{1}{2}8\left(\sqrt{73}\right)^2.\sin\frac{360}{8}$$
$$= 4x\left(\sqrt{73}\right)^2.sin\,45$$
$$= 292x\frac{1}{2}\sqrt{2}$$
$$= 206.475$$

FIGURE 8. Results of ethnomatematic problem solving problem d (area and circumference of the circle) by BS



Translation:
Determine the area and circumference of the circle that can be formed by the irregular octagon to the maximum!

$$maximum\ area = \pi.r^2$$
$$= 3{,}14.8^2$$
$$= 200{,}96cm^2$$
$$maximum\ circumference = 2.\pi.r$$
$$= 2.3{,}14.8$$
$$= 50{,}24\ cm$$

FIGURE 9. Results of ethnomatematic problem solving problem d (area and circumference of the circle) by GS

Based on the results of the settlement in Figures 8 and 9 above, it appears that the settlements made by BS and GS are different. BS can understand, plan and solve by using the formula of circumference and area of the 8th facet in detail, while GS uses the formula of circumference and area of the circle in general. From the interview results, BS and GS rechecked the resolution and confirmed their answers. This difference shows that in solving problems between men and women, women's attention is generally focused on concrete, practical, emotional and personal things, while men are focused on things that are intellectual, abstract and objective. The ability to solve math problems between men and women has a difference that lies from how male and female students solve math problems based on ethnomatematics.

The results of this study are also in line with research conducted by Herdiman which obtained the results that male students have better problem solving skills compared to women, male students are more thorough and more complete in writing down problem solving steps compared to female students. However, at the stage of implementing the plan of women's abilities better than men although some are lacking in other stages [23]. Meanwhile, research conducted by Davita and Pujiastuti showed that female students' math problem solving skills are better than that of male students [24].

The results show that gender or gender differences are in fact factors that can influence the way of thinking and determining problem solving. Gender or gender differences by Nur & Palobo is the formation of self-identity by determined by the way a person acts and behaves in order to be accepted in the community in general [14]. Results of the study by Purwaningsih & Ardani stated that the difference is due to the difference in the characteristics of each student's learning style, where female students tend to have a good visual learning style while male students excel in kinesthetic and auditory learning styles in solving problems [25].

This is also in line with the opinion of Nur & Palobo which reveals the learning patterns of female students are more varied so as to create interactive and collaborative learning, in contrast to male students enjoy an individual learning process and like competitive learning patterns [14]. However, from various studies and studies stated that there is no role of gender itself, both men and women who have differences and outperform each other in mathematics, in general women are superior in various fields related to mathematics [26].

From the differences in the results of this study and previous studies, it can be assumed that each of these studies was conducted on students with different characteristics and through testing and under different conditions. Similarly, this study was conducted limited to the context of ethnomatematic-based math problems in secondary school students in Ngawi, East Java, Indonesia. Similar research still needs to be done again in different ethnomatematic contexts and the disses of students with different origins and conditions.

CONCLUSION

The results showed that there were differences between the abilities of male and female students in solving problems based on the ethnomathematics of Ngawi culture on the topic of Geometry. Based on problem solution for number problem a, b, c and d, male students are better at understanding problems based on Ngawi's ethnomathematics than male students. When planning and solving problems based on the ethnomathematics of Ngawi culture, male students also appear to be more detailed in explaining each step of the solution. Male students can check completion well than female students. From the results of this study, it can be suggested that junior high school mathematics teachers can design ethnomathematics-based problems that are more varied according to the culture of the students' environment.

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REFERENCES

1. Scott CL. What Kind of Learning for the 21st Century? Education Research and Foresight, United Nations Educational, Scientific and Cultural Organization (UNESCO): 2015.
2. Treffinger DJ, Isaksen SG. Teaching and applying creative problem solving: implications for at-risk students. Int J Talent Dev Creat 2013;1:87–97.
3. Murtafiah W, Sa'dijah C, Chandra TD, Susiswo. Exploring the Types of Problems Task by Mathematics Teacher to Develop Students' HOTS. AIP Conf. Proc. 2215, vol. 060018, 2020, p. 1–7.
4. Harahap ER, Surya E. Kemampuan Pemecahan Masalah Matematis Siswa Kelas VII Dalam Menyelesaikan Persamaan Linier Satu Variabel. Pros Semin Nas Mat Univ Negeri Medan 2017:553–8.
5. Awojobi OA. Epidural needle and intraosseous access. vol. 33. Paris: OECD; 2003. https://doi.org/10.1177/004947550303300131.
6. OECD. Pisa 2015 Results in Focus. 2018.
7. Buranda MS, Bernard M. Analisis Kemampuan Pemecahan Masalah Matematik Materi Lingkaran Siswa Smp Berdasarkan Gender. JPMI (Jurnal Pembelajaran Mat Inov 2019;2:33. https://doi.org/10.22460/jpmi.v2i1.p33-40.
8. Danoebroto SW. Model Pembelajaran Matematika Berbasis Pendidikan Multikultural. J Pembang Pendidik Fondasi Dan Apl 2012;1. https://doi.org/10.21831/jppfa.v1i1.1054.
9. Nugraha T, Maulana M, Mutiasih P. Sundanese Ethnomathematics Context in Primary School Learning. Mimb Sekol Dasar 2020;7:93–105. https://doi.org/10.17509/mimbar-sd.v7i1.22452.
10. Widjaja W. The use of contextual problems to support mathematical learning. J Math Educ 2013;4:151–9. https://doi.org/10.22342/jme.4.2.413.151-159.
11. Anggo M. Penggunaan masalah matematika kontekstual memungkinkan siswa untuk mengembangkan pola berpikir yang lebih kompleks karena melibatkan pengetahuan matematika formal dan informal. Melalui pemecahan masalah matematika kontekstual, siswa dirangsang untuk menge 2011;01:35–42.
12. Murtafiah W. Profil Kemampuan Siswa Memecahkan Masalah Kontekstual Matematika di SMP Negeri 1 Madiun. J Pendidik MIPA 2009;1:25–37.
13. Gün ET, Atasoy B. The effects of augmented reality on elementary school students' spatial ability and academic achievement. Educ Sci 2017;42:31–51. https://doi.org/10.15390/EB.2017.7140.
14. Nur AS, Palobo M. Profil Kemampuan Pemecahan Masalah Matematika Siswa Ditinjau dari Perbedaan Gaya Kognitif dan Gender. Kreano (Jurnal Mat Kreat -Inovatif) 2018;9:139–48.
15. Balamurugan M. Etnomathematics; An Approach For Learning Mathematics From Multikultural Perspective. Int J Mod Res Rev 2015;3:716–20.
16. Utami NW, Sayuti SA, Jailani J. Math and Mate in Javanese Primbon: Ethnomathematics Study. J Math Educ 2019;10:341–56. https://doi.org/10.22342/jme.10.3.7611.341-356.
17. Maryati M, Indra Prahmana RC. Ethnomathematics: Exploring the Activities of Designing Kebaya Kartini. MaPan 2018;6:11–9. https://doi.org/10.24252/mapan.2018v6n1a2.

18. Suwarno, Lestari NDS, Murtafiah W. Exploring ethnomathematics activities to tobacco farmers ' community at Exploring ethnomathematics activities to tobacco farmers ' community at Jember , East Java , Indonesia. J Phys Conf Ser Ser 2020;1657:1–8. https://doi.org/10.1088/1742-6596/1657/1/012027.
19. Polya G. How to Solve It: A New Aspect of Mathematical Method. Second. Princeton, New Jersey: Princeton University Press; 1973.
20. Polya G. How to Solve It, A New Aspect of Mathematical Method. USA: Princeton University Press; 1957.
21. Roebyanto G, Harmini S. Pemecahan Masalah Matematika untuk PGSD. Bandung: Remaja Rosda Karya; 2017.
22. Dorisno. Hubungan Gender dengan Kemampuan Pemecahan Masalah Matematika. J Tarb Al-Awlad 2019;IX:1–108.
23. Herdiman I. Kemampuan Pemecahan Masalah Matematik Siswa Smp Pada Materi Lingkaran Berbentuk Soal Kontekstual Ditinjau Dari Gender. J Numer 2018;5:19–28.
24. Davita, Pujiastuti. Anallisis Kemampuan Pemecahan Masalah Matematika Ditinjau Dari Gender. Kreano (Jurnal Mat Kreat Inov 2020;11:110–7.
25. Purwaningsih D, Ardani A. Kemampuan Pemecahan Masalah Matematis Materi Eksponen Dan Logaritma Ditinjau Dari Gaya Belajar Dan Perbedaan Gender. AKSIOMA J Progr Stud Pendidik Mat 2020;9:118. https://doi.org/10.24127/ajpm.v9i1.2632.
26. Indrawati N, Tasni N. Analisis Kemampuan Pemecahan Masalah Berdasarkan Tingkat Kompleksitas Masalah dan Perbedaan Gender. J Saintifik 2016;2:16–25.

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