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Analysis of Student Image Concepts in Constructing Proof and Mathematical Communication in terms of Gender

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ABSTRACT: The concept of student image has an important role in constructing mathematical proof and communication that can be viewed based on gender. Therefore, this study seeks to analyze the role of students' image concepts in constructing proof and mathematical communication in terms of gender. The research method used in this research is qualitative research with a grounded theory approach. Participants were selected using the Theoretical Sampling approach, in which the selection of participants was based on concepts that were proven to be related theoretically to the theory being developed. Data analysis was obtained based on the results of student tests, interviews and data tabulations given to participants which were compiled into a new concept, theme then the desired sub-category. The theory that resulted from this research is that students who have good image concept formation will be able to construct good mathematical proof and communication. The concept of image students are able to form the ability to construct proof and mathematical communication by interpreting cognitive structure abilities that link mathematical concepts, including mental images, properties, characteristics and processes related to predefined concepts or sub-categories that are differentiated by gender. So that the role of the student's image concept is very important in the formation of the ability to construct mathematical proof and communication which is able to make students have good mathematical skills by understanding various concepts, theorems, definitions and being able to make conjectures from the statements that have been given.

KEYWORDS: Image Concept, Proof Construction, Mathematical Communication, Gender

I. INTRODUCTION

Mathematics is one of the sciences that is very important in efforts to improve a person's intellectual abilities and skills (Siagian et al., 2022). Mathematics will shape a person to have the ability to think logically, systematically, analytically, creatively and critically, as well as the ability to work together. Mathematics studies order, organized structures, mathematical concepts are arranged hierarchically, structured and systematic, starting from the simplest concepts to the most complex concepts. Learning mathematics makes it a habit to solve problems by asking the right questions, looking at the available facts, distinguishing them from assumptions, and solving the problem with creative and systematic solutions (Khusna, 2020).

The formal goal of mathematics is about forming a person's thinking pattern in a logically consistent and systematic way, not just a mere calculation process. So learning mathematics will help train a person's mindset in solving problems more logically, critically and creatively in everyday life. Based on the material and formal objectives of mathematics, it states that before students are able to reason, the basic thing that students need in terms of mathematical knowledge is the concept of mathematics itself (Septiati, 2021). Two things that cannot be separated when students learn mathematics are concept image and concept definition. According to David Tall, concept image is a cognitive structure description of a concept that contains mental images related to properties and processes, while concept definition is a form of words used to specify a concept (Fatio, 2020). Based on the statement above, it can be seen that the image concept is a visual representation, properties and processes related to the concept. The formation of each student's image concept will be different from one another, making it possible for each student to create different representations of the same concept because each student has learning experiences to understand the previous concept (Maarif et al., 2020) The concept of student image covers the entire scope of a person's cognitive structure connected to concepts, including mental images, traits and characteristics, as well as processes related to new concepts. This shows that the formation of each student's image concept is definitely different when viewed from the student's gender. Male and female students have different levels of cognition so they have different mathematical abilities (Erawati & Purwati, 2020). These gender differences are not only found in differences in mathematical abilities produced by a student but also in how to acquire mathematical knowledge, because gender differences can influence students' mathematical thinking abilities. The difference lies in how male and female students solve existing problems (Wijaya et al., 2019).

The fundamental concept of mathematics is the ability to prove. Proof, constructing proof, and the process of proving mathematical statements - questions which will then be created in the delivery of mathematical communication in the form of diagrams, tables, symbols and graphs (A Mujib, 2021). The difficulties faced in constructing proof include: (1) understanding mathematical concepts, (2) mathematical language and symbols, (3) mathematical proof strategies, and (4) reading proof (A Mujib, 2021). According to the statement above, it shows that constructing mathematical proof begins with understanding a mathematical concept which is then followed by stating the proof using the language of mathematical communication (Abdul Mujib, 2016).

Through establishing an understanding of the image concept, it is hoped that students will be able to construct proof which will then be able to interpret it in the form of mathematical communication (Siregar et al., 2020). Understanding conceptual concepts has 3 (three) important roles in students' thinking processes in advanced mathematics learning, namely 1) helping to develop students' mathematical concepts, 2) as an effective method to help maintain knowledge in students' minds, and 3) as a key to help in using students' knowledge (Nurwahyu et al., 2016). In line with the opinion of Piaget, Dubinsky & McDonald which states that the ability to abstract, construct and represent an individual will continuously develop through higher mathematics. Thus, towards the end of a student's learning period, the student's layer of understanding will increase (Sagala & Hatip, 2018).

Students' mathematical communication abilities based on gender differences will be seen in abilities such as drawing mathematical expression, and written text. This is following the indicators used to measure mathematical communication skills in this research, namely: 1) expressing a mathematical situation or idea in the form of an image and completing it (drawing), 2) expressing a mathematical situation or idea in the form of a symbol or mathematical model and completing it (a mathematical expression), and 3) stating and explaining an image or mathematical model in the form of mathematical ideas (written texts) (Deswita & Kusumah, 2018). Based on data (Nugraha & Pujiastuti, 2019), it was found that female students are superior in mathematical (verbal) communication skills, because they are more motivated and organized in learning. Meanwhile, based on these data, it states that male students are higher in the indicator of expressing a mathematical situation or idea in the form of a picture rather than solving it, in accordance with the results of the female students' answers which prioritize components in expressing a mathematical situation or idea in the form of a picture but not precise in completing it (Nuraini et al., 2020). This means that female students have more control in solving them, this can be seen from the results of students' answers to the facts in the field

The concept of student image is closely related to students' ability to construct proof and mathematical communication. After students' image concepts are well formed, students can represent their ideas by constructing evidence which is expressed in written/mathematical language (Siagian et al., 2024). Gender differences can result in differences in student learning psychology. Several research results also show that gender factors influence mathematics learning due to biological differences in the brains of boys and girls (Nugraha & Pujiastuti, 2019). Likewise, in forming the concept of student image, gender is also a factor. Women generally pay attention to concrete, practical, emotional, and personal things, while men will only focus on things that are intellectually oriented, abstract, and objective (Davita & Pujiastuti, 2020). From this statement, we can see that there is no fundamental difference between the abilities of women and men, but the difference lies in their attitudes and how they view things. These differences in attitudes and perspectives also occur in implementing learning strategies. Based on the various statements above, by linking the concept of student image in constructing proof and mathematical communication, the research that will be carried out in an "Analysis of the concept of student image in constructing mathematical proof and communication in terms of gender".

II. METODE

The research method used is Qualitative Research using a Grounded Theory approach. Grounded Theory is used to obtain new theories carried out directly by researchers, because researchers go directly into the field to collect data (Aulia & Eka, 2018). The characteristics of problem formulation in Grounded Theory research are: 1) oriented toward identifying the phenomenon being studied, 2) oriented towards process and action, and 3) expressly expresses the object to be researched (Aulia & Eka, 2018). This shows that Grounded Theory research moves from data to concepts, not from existing theories. The data that has been obtained is analyzed into facts, and the facts become new, more epic concepts. Grounded theory was developed inductively during the research and through continuous interaction with data in the field. The procedures carried out at the data analysis stage are the basis of a coding process consisting of open coding, selective coding, and theoretical coding. The researcher is the main instrument in research, so the validity and reliability of both observation instruments, interviews, and student worksheets and the research process rest with the researcher.

The qualitative research stage uses a special grounded theory approach to examine in more depth the analysis of image concepts in constructing mathematical evidence and communication. Namely the development of theory based on data obtained systematically and analyzed within a social research framework (Glaser & Strauss, 2006). Through an inductive analysis approach from a number of data, researchers try to obtain a theory (conjecture) that describes the analysis of image concepts in constructing mathematical evidence and communication in terms of gender. This grounded theory research consists of three sequential steps, namely open coding, selective coding, and theoretical coding (Jones & Alony, 2011). The in-depth study (condensation) was carried out through researcher interviews with theoretically selected participants (theoretical sampling), namely sampling aimed at adding explanatory power to categories that had weak explanatory power, based on the need for supporting data for the theory being developed, namely grading the ability to construct evidence. and mathematical communication in terms of gender.

III. RESULT AND DISCUSSION

The results of the analysis of 20 students' answers refer to students' image concept abilities in constructing mathematical proof and communication in terms of gender in the transformation geometry material. Students' image concept abilities in constructing proof and mathematical communication in transformation geometry material are targeted at the aspect of using diagram sketches and transformation geometry labels; initial step; use of conjectures; proof; arguments; flow of thinking and related concepts. The following is an example of a mathematical proof problem and the use of mathematical communication in transformation geometry material in a test of the ability to construct proof and mathematical communication given to students. From the results of students' answers to questions regarding proof and communication of transformation geometry, the following will present the percentage of student success in constructing mathematical proof and communication of transformation geometry based on predetermined indicators.

Table 1 Student Image Concepts in Constructing proof

Proof Construction Indicator	Gender	Success Percentage
Pre-Structural: Ability to organize and manipulate facts, as well as sequence the steps of proof provided for the construction of valid proof	Male	20%
	Female	25%
Partial-Structural: Ability that makes connections between the facts known in the statement and the elements to be proven	Male	25%
	Female	30%
Holistic-Structural: The ability to use premises, definitions, or theorems related to statements to build a proof	Male	20%
	Female	25%

In Table 1, we can see that there were 21.67% of male students who succeeded in using the concept of student image in constructing proof and the percentage of success for female students was 26.67%. This shows that there is a connection between aspects of the image concept and indicators of mathematical proof construction. The student's image concept plays a role in interpreting the properties, characteristics and sub-categories of transformation geometry which will then be used in constructing proof in terms of using appropriate conjectures, taking initial steps for proof, using logical arguments and using appropriate theorems. The process of constructing proof using conjectures is an important key in developing the proof to be compiled, accompanied by clear and logical arguments. The process of determining a conjecture which is then followed by the process of proving the conjecture will become a series of statements which then form the desired proof by expressing a coherent argument. In table 1, it can be seen that aspects of the use of conjectures and arguments in constructing students' mathematical proofs of transformation geometry still need to be optimized. Because only a few students are correct in using conjectures and constructing proof arguments according to correct concepts and theorems. The students' difficulties in using conjectures and compiling transformation geometry arguments include: 1) the conjecture used is not appropriate and does not meet the requirements of the concept of transformation geometry; 2) the conjecture used does not lead to the intended proof; 3) the arguments that have been prepared are not accompanied by logical reasons so that proof errors occur and 4) the arguments that have been prepared have nothing to do with the intended proof.

Tabel 2 the concept of student image in mathematical communication

Mathematical Communication Indicators	Gender	Success Percentage
Understand and find mathematical ideas in finding solutions to problems and provide rational reasons for a statement	Male	20%
	Female	25%
Changing the form of descriptions and images into mathematical models and communicating the results of work logically using mathematical language	Male	25%
	Female	25%
Using mathematical terms and symbols correctly so as to be able to illustrate mathematical ideas in the form of pictures, tables, graphs and written symbols through relevant	Male	25%
	Female	30%
Making conjectures is in the form of composing arguments so that you are able to formulate definitions and make generalizations	Male	20%
	Female	25%

In table 2, there are 22.5% of male students who succeeded in using the image concept in mathematical communication and the success of female students was 26.25%. The role of the image concept in mathematical communication is so that students can understand the concept of transformation geometry so that students are able to translate problems and illustrate the ideas of these questions using symbols or mathematical terms and even be able to interpret them in the form of pictures, tables and graphs accompanied by rational reasons and are able to make the right conjecture.

Experience in constructing mathematical proofs and communication is an important factor that causes students to fail in constructing mathematical proofs. Knowledge of proof strategies is another factor that causes students to fail. On the other hand, students also still lack the confidence to validate whether the evidence is valid or not. In the proof process using written mathematical communication, apart from solving problems, students are also required to be able to prove logically and have scientific reasons. So, it is very important for students to have the ability to understand the concept of image well. especially in building mathematical proof, it must be done regularly and continuously. Thus, when students are faced with a proof problem, they do not feel antipathy, are lazy about working, or feel difficult. The research results show that an emphasis on the frequency of practice in making sketches or visual demonstrations of the required transformation geometry problems can provide several intuitive interpretations in helping the process of constructing mathematical proofs and the use of mathematical communication in terms of gender. This also reveals that constructing sketches or visuals with appropriate transformation geometry labels/symbols can make it easier for a student in the process of constructing mathematical proof and communicating transformation geometry.

Not only looking at the sketches or visuals presented, the initial steps or initial ideas for proof are also important elements in constructing mathematical proof. The initial steps or ideas used must have the right elemental relationships with the concept of transformation geometry in order to lead to the intended proof. Furthermore, conjecture and proof are important elements in constructing mathematical proof. If the conjecture used is not appropriate then the resulting proof will not be in accordance with the concept. The use of conjectures must be accompanied by the preparation of coherent arguments accompanied by logical reasons related to the concept. Likewise, the use of the flow of thinking and understanding of the concepts used must be in accordance with the transformation geometry theorem. Some of the errors and difficulties that were analyzed from students' answers were that students had difficulty translating the questions given and technical errors occurred in drawing and using the right symbols.

The errors that occur include: 1) Students find difficulties in translating the questions, 2) Students' technical errors in drawing and using the right symbols, 3) Students' difficulties in determining the initial steps that are related to the correct conjecture, 4) There are steps Incoherent proof steps, 5) The arguments that are prepared and expressed are not logical, 6) The flow of thinking used in communicating is not coherent with the proof steps, 7) Inconsistent proof steps.

IV. CONCLUSION

From the data that has been obtained, it can be concluded that the concept of student image has an important role in constructing mathematical proof and communication, namely: 1) Students are able to relate facts based on properties and characteristics to interpret existing problems. 2) Students are able to sequence valid and coherent proof steps, 3) Students are able to use premises, definitions, concepts and theorems related to transformation geometry to build proofs and communicate them in written form, 4) Gender is used to see differences in interpreting abilities. a cognitive structure that connects mathematical concepts, including mental images, properties, characteristics and processes related to defined concepts or subcategories.

So, the researcher will recommend the same problem for further research, using these indicators in the learning process of the role of students' image concepts in constructing mathematical proof and mathematical communication in terms of gender or other researchers can use these aspects in the process of developing other research instruments in constructing proof and mathematical communication, mathematical geometry, transformation or other materials. Because of the image concept, students are able to form the ability to construct mathematical proof and communication by interpreting cognitive structure abilities that connect mathematical concepts, including mental images, properties, characteristics and processes related to predetermined concepts or subcategories.

REFERENCES.

1. Aulia, F., & Eka, L. F. (2018). Metodologi Kualitatif “Grounded Theory.” Ilmiah Akuntansi Dan Bisnis, 9(1), 1–19.
2. D. Tall, “Constructing the concept image of a tangent,” Proc. 11th Conf. Int. Gr. Psychol. Math. Educ., vol. 3, no. Skemp 1979, pp. 69–75, 1986, [Online]. Available: http://www.warwick.ac.uk/staff/David.Tall/pdfs/dot1987c-tangent-pme.pdf.
3. D. Tall and S. Vinner, “Concept image and concept definition in mathematics with particular reference to limits and continuity,” Educ. Stud. Math., vol. 12, no. 2, pp. 151–169, 1981, doi: 10.1007/BF00305619.
4. Davita, P. W. C., & Pujiastuti, H. (2020). Anallisis Kemampuan Pemecahan Masalah Matematika Ditinjau Dari Gender. Kreano, Jurnal Matematika Kreatif-Inovatif, 11(1), 110–117. https://doi.org/10.15294/kreano.v11i1.23601
5. Deswita, R., & Kusumah, Y. S. (2018). Peningkatan Kemampuan Komunikasi Matematis Siswa Melalui Model Pembelajaran CORE dengan Pendekatan Scientific. Edumatika : Jurnal Riset Pendidikan Matematika, 1(1), 35. https://doi.org/10.32939/ejrpm.v1i1.220
6. Erawati, N. K., & Purwati, N. K. R. (2020). Kemampuan Pembuktian Matematika Berdasarkan Gender Dan Gaya Belajar. Prima: Jurnal Pendidikan Matematika, 4(2), 109. https://doi.org/10.31000/prima.v4i2.2617
7. Fatio, N. A. (2020). Kajian Concept Image Siswa Pada Topik Persamaan dan Pertidaksamaan Linear Satu Variabel Universitas Pendidikan Indonesia | repository.upi.edu | perpustakaan.upi.edu. Universitas Pendidikan Idnonesia. Respository.Upi.Edu, 1–8.
8. Glaser, G., & Strauss, L. (2006). Grounded Theory.
9. Glaser, G., & Strauss, L. (2006). Grounded Theory. Aldine Transaction, A Division Transaction of Publisher New Burnwick (U.S.A) and London (U.K).1-284.
10. Glaser, G., Strauss, L. A., Mills, J., Bonner, A., & Francis, K. (2006). The Development of Constructivist Grounded Theory. International Journal of Qualitative Methods, 5(1), 25–35. https://doi.org/10.1177/160940690600500103
11. Jones, M., & Alony, I. (2011). Guiding the use of grounded theory in doctoral studies - An example from the australian film industry. International Journal of Doctoral Studies, 6(January), 95–114. https://doi.org/10.28945/1429
12. Khusna, A. H. (2020). React: Strategi Pembelajaran Untuk Mengembangkan Kemampuan Mahasiswa Dalam Mengkonstruksi Bukti. AKSIOMA: Jurnal Program Studi Pendidikan Matematika, 9(3), 570. https://doi.org/10.24127/ajpm.v9i3.2950
13. Maarif, S., Pradipta, T. R., Pramuditya, S. A., & Noto, M. S. (2020). Penerapan Model Guided Discovery Learning dalam Mengembangkan Kemampuan Mengkonstruksi Bukti Geometri. JNPM (Jurnal Nasional

Pendidikan Matematika), 4(1), 28. https://doi.org/10.33603/jnpm.v4i1.2811
14. Mujib, A. (2021). Kesulitan Mahasiswa Dalam Pembuktian Matematis: Problem Matematika Diskrit. Jurnal MathEducation Nusantara, 2(1), 51–57.
15. Mujib, Abdul. (2016). Pengembangan Kemampuan Pembuktian Dalam Matematika Diskrit Menggunakan Pengajaran Berbasis DNR. Seminar Nasional Matematiak Dan Pendidikan Matematika (SNMPM), ISBN 978-6(Februari), 122–138.
16. Nugraha, T. H., & Pujiastuti, H. (2019). Analisis Kemampuan Komunikasi Matematis Siswa Berdasarkan Perbedaan Gender. Edumatica : Jurnal Pendidikan Matematika, 9(1), 1–7. https://doi.org/10.22437/edumatica.v9i1.5880
17. Nuraini, Firmansyah, & Mawengkang, H. (2020). Pengembangan Perangkat Pembelajaran Matematika Realistik Untuk Meningkatkan Kemampuan Komunikasi Matematis. Journal for Lesson and Learning Studies, 3(1), 58–65.
18. Davita, P. W. C., & Pujiastuti, H. (2020). Anallisis Kemampuan Pemecahan Masalah Matematika Ditinjau Dari Gender. Kreano, Jurnal Matematika Kreatif-Inovatif, 11(1), 110–117. https://doi.org/10.15294/kreano.v11i1.23601
19. Deswita, R., & Kusumah, Y. S. (2018). Peningkatan Kemampuan Komunikasi Matematis Siswa Melalui Model Pembelajaran CORE dengan Pendekatan Scientific. Edumatika : Jurnal Riset Pendidikan Matematika, 1(1), 35. https://doi.org/10.32939/ejrpm.v1i1.220
20. Erawati, N. K., & Purwati, N. K. R. (2020). Kemampuan Pembuktian Matematika Berdasarkan Gender Dan Gaya Belajar. Prima: Jurnal Pendidikan Matematika, 4(2), 109. https://doi.org/10.31000/prima.v4i2.2617
21. Fatio, N. A. (2020). Kajian Concept Image Siswa Pada Topik Persamaan dan Pertidaksamaan Linear Satu Variabel Universitas Pendidikan Indonesia | repository.upi.edu | perpustakaan.upi.edu. Universitas Pendidikan Idnonesia. Respository.Upi.Edu, 1–8.
22. Glaser, G., & Strauss, L. . (2006). Grounded Theory.
23. Glaser, G., & Strauss, L. . (2006). Grounded Theory. Aldine Transaction, A Division Transaction of Publisher New Burnwick (U.S.A) and London (U.K).1-284.
24. Glaser, G., Strauss, L. A., Mills, J., Bonner, A., & Francis, K. (2006). The Development of Constructivist Grounded Theory. International Journal of Qualitative Methods, 5(1), 25–35. https://doi.org/10.1177/160940690600500103
25. Jones, M., & Alony, I. (2011). Guiding the use of grounded theory in doctoral studies - An example from the australian film industry. International Journal of Doctoral Studies, 6(January), 95–114. https://doi.org/10.28945/1429
26. Khusna, A. H. (2020). React: Strategi Pembelajaran Untuk Mengembangkan Kemampuan Mahasiswa Dalam Mengkonstruksi Bukti. AKSIOMA: Jurnal Program Studi Pendidikan Matematika, 9(3), 570. https://doi.org/10.24127/ajpm.v9i3.2950
27. Maarif, S., Pradipta, T. R., Pramuditya, S. A., & Noto, M. S. (2020). Penerapan Model Guided Discovery Learning dalam Mengembangkan Kemampuan Mengkonstruksi Bukti Geometri. JNPM (Jurnal Nasional Pendidikan Matematika), 4(1), 28. https://doi.org/10.33603/jnpm.v4i1.2811
28. Mujib, A. (2021). Kesulitan Mahasiswa Dalam Pembuktian Matematis: Problem Matematika Diskrit. Jurnal MathEducation Nusantara, 2(1), 51–57.
29. Mujib, Abdul. (2016). Pengembangan Kemampuan Pembuktian Dalam Matematika Diskrit Menggunakan Pengajaran Berbasis DNR. Seminar Nasional Matematiak Dan Pendidikan Matematika (SNMPM), ISBN 978-6(Februari), 122–138.
30. Nugraha, T. H., & Pujiastuti, H. (2019). Analisis Kemampuan Komunikasi Matematis Siswa Berdasarkan Perbedaan Gender. Edumatica : Jurnal Pendidikan Matematika, 9(1), 1–7. https://doi.org/10.22437/edumatica.v9i1.5880
31. Nuraini, Firmansyah, & Mawengkang, H. (2020). Pengembangan Perangkat Pembelajaran Matematika Realistik Untuk Meningkatkan Kemampuan Komunikasi Matematis. Journal for Lesson and Learning Studies, 3(1), 58–65.
32. Nurwahyu, B., Tatag, Y. E.., & Suwarsono, S. (2016). Bayangan Konsep (Concept Image) Jurnal Matematika Kreatif-Inovatif, 7(2), 153–162. https://doi.org/10.15294/kreano.v7i2.5901.Mahasiswa pada Konsep Kombinasi Ditinjau dari Perbedaan Gender dan Kemampuan Matematika. Kreano,
33. Sagala, V., & Hatip, A. (2018). Peningkatan Lapisan Pemahaman Konsep Luas Bangun Datar Mahasiswa melalui Model Pembelajaran PRAKTAK. Jurnal Didaktik Matematika, 5(2), 30–39. https://doi.org/10.24815/jdm.v5i2.11898
34. Septiati, E. (2021). Kemampuan Mahasiswa Dalam Mengkonstruksi Bukti Matematis pada Mata Kuliah

Analisis Real. Jurnal Inovasi Pendidikan Matematika, 4(1), 64–72.
35. Siagian, S. S., Mujib, A., & Firmansyah. (2024). The role of concept image in constructing mathematical proof. AIP Conference Proceedings, 3046(1), 020041.
36. Siagian, S. S., Mujib, A., & Zahari, C. L. (2022). Analisis Tingkat Kecemasan Matematika dalam Pembentukan Konsep Image Siswa. Paradikma: Jurnal Pendidikan Matematika, 15(1), 8–13. https://doi.org/10.24114/paradikma.v15i1.34569
37. Siregar, R. N., Mujib, A., Siregar, H., & Karnasih, I. (2020). Peningkatan Kemampuan Berpikir Kreatif Siswa Melalui Pendekatan Matematika Realistik. Edumaspul: Jurnal Pendidikan, 4(1), 56–62. https://doi.org/10.33487/edumaspul.v4i1.338
38. Wijaya, R., Fahinu, F., & Ruslan, R. (2019). Pengaruh Kecemasan Matematika dan Gender Terhadap Kemampuan Penalaran Adaptif Matematika Siswa SMP Negeri 2 Kendari. Jurnal Pendidikan Matematika, 9(2), 173. https://doi.org/10.36709/jpm.v9i2.5867