

Students' Interest in Learning Mathematics Based on Gender Differences in SMP Negeri 1 Carenang

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Abstract: This study was conducted to analyze the learning interest of grade VIII junior high school students in learning gender-based algebraic literature mathematics using indicators of learning interest, namely feelings of pleasure, student interest, student involvement, diligent study and mathematics homework, perseverance and learning discipline and having a study schedule. The method used for analysis in this study is qualitative description using the Likert scale with the provision of tools in the form of questionnaires that have been filled in Analysis of students' interest in learning mathematics. The population of this study was grade VIII students of SMPN 1 Carenang and the sample studied was one class consisting of 40 students. The tools used in this study were quizzes and questionnaires for each student. The results obtained in this study show that there are differences. In gender-based algebra literature, students are interested in mathematics, where men have better hobbies than women. This study was conducted to analyze the learning interest of grade VIII junior high school students in learning gender-based algebraic literature mathematics using indicators of learning interest, namely feelings of pleasure, student interest, student involvement, diligent in learning mathematics, perseverance and learning discipline and having a study schedule. The method used for analysis in this study is qualitative description using the Likert scale with the provision of tools in the form of questionnaires that have been filled in Analysis of students' interest in learning mathematics. The population of this study was SMPN 1 Carenang students and the sample studied was one class consisting of 40 students in grade VIII SMP N 1 CARENANG. The tools used in the study were questionnaires and quizzes for each student. The results obtained in this study show differences in student interest and mathematics learning outcomes in gender-based number literature, where female students have more motivation to learn mathematics than male students.

Keywords: Learning Mathematics, Gender Differences, Interest.

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A. INTRODUCTION

Interest in learning is an activity that someone does in the process of learning in a fun way without being forced by others. Following Slameto (Siagiana 2015) shows that interest in learning is a person's tendency to memorize and pay attention to specific activities. Usually, students' interest in learning shows attention to the object of interest, accompanied by feelings of pleasure and achievement, satisfaction. According to the view (Siagian 2015), caring is a feeling of love, and flowers appear without anyone asking for anything or surgery. According to (Hendriana et al., 2017), learning indicators include (1) learning requirements; (2) students' interest in learning; (3) student involvement in learning; (4) study diligently and do math

homework; (5) perseverance and discipline to study and have a schedule. Mathematics is a core subject that must be taught in formal education at primary and secondary levels because it is considered a crucial subject (Maya and Setiawan, 2018). It is often observed that students' interest in learning mathematics is shallow because students' mathematical problem-solving thinking skills are complex.

What role does the teacher play in stimulating students' interest in learning? Mathematics by changing the mindset of students towards mathematics that students like affects learning, significantly if interest can stimulate students' curiosity and love for mathematics. (Setiawan, 2015) argues that to improve the quality of formal and non-formal education, educators need to prepare students to have various abilities to become human beings capable of competition and quality. The interest in learning is not something fixed or systematic, but something not asked before, which can turn into something interesting due to some input or new thoughts and ideas and less clear quality of high academic achievement. The genus comes from the Latin word "chi" which means type. Opposite sex in education can occur in the achievement of learning outcomes, according to Shah (MZ, Zubaidah Amir, 2013) the level of student achievement in the learning process at school is expressed as the value obtained by students from test results related to specific subjects.

Research related to mathematics learning by gender. According to (MZ, Zubaidah Amir, 2013) about gender perspectives in mathematics learning, especially students' mathematical abilities in terms of gender, it shows that female students are better in mathematics, which is caused by the difference between How do students solve problems? Women excel in communication skills, become more dynamic and organized in learning. Interest in learning mathematics is a critical aspect of students' academic development, influencing their performance and future career choices. The dynamics of this interest are often shaped by various factors, including individual characteristics, socio-cultural influences, and educational contexts. One such factor that has garnered considerable attention in educational research is gender differences.

Gender differences in mathematics education have been a subject of debate and investigation for decades. While some studies suggest that gender disparities in mathematics performance and interest are diminishing (Hyde et al., 2008), others continue to highlight persistent discrepancies, particularly in certain contexts and at different educational levels (Stoet & Geary, 2013). Understanding the nuanced interplay between gender and students' interest in learning mathematics is crucial for educators and policymakers seeking to promote equitable and inclusive learning environments. The significance of exploring gender differences in mathematics interest extends beyond mere academic curiosity. It intersects with broader societal narratives regarding gender roles, stereotypes, and opportunities in STEM (Science, Technology, Engineering, and Mathematics) fields. By investigating how gender influences students' interest in mathematics, educators can address systemic biases and develop interventions to support all students in their mathematical learning journey.

Despite the wealth of research on gender differences in mathematics education, there remains a need for localized studies that examine how these dynamics manifest within specific educational settings. This study seeks to address this gap by exploring students' interest in

learning mathematics based on gender differences in SMP Negeri 1 Carenang. By focusing on a specific school context, this research aims to provide insights that are relevant and actionable for educators and stakeholders at the school level.

This study will not only investigate gender differences but also consider a range of factors that may influence students' interest in mathematics. These factors may include but are not limited to socio-economic background, parental involvement, teacher-student interactions, and curriculum design. By adopting a comprehensive approach, this research aims to provide a nuanced understanding of the multifaceted nature of students' interest in learning mathematics in the context of SMP Negeri 1 Carenang. Through an exploration of relevant literature and empirical findings, this study seeks to contribute to the existing body of knowledge on gender differences in mathematics education. By shedding light on the factors that shape students' interest in mathematics, this research endeavors to inform educational practices and policies aimed at fostering an inclusive and supportive learning environment for all students, irrespective of gender.

B. METHODS

Each student has different abilities and difficulties with different levels. However, in the learning process, we often find students not open about the difficulties faced. So learning problems arise without getting the right solution. Therefore, in this study, an analysis was carried out on the benefits of junior high school mathematics students in grade VIII studying gender-based algebra mathematics material. This research was conducted using qualitative descriptive methods. The sample used in this study was a sample of 40 grade VIII students of SMP N 1 Carenang. The indicators of student interest in learning used in this study were enjoyment, student interest, student engagement, perseverance in learning and completing mathematical tasks, perseverance and discipline in learning, and research planning. Then we analyzed students' learning interest with the average and associated the learning interest performance category in a percentage formula using the Likert scale in their opinion. Explaining Sugishirono (johan, 2014) as an indicator variable, measured using Likert scale variables. The indicator is then used as a starting point for editing device elements in descriptions.

C. RESULTS AND DISCUSSION

The first step in this study is to provide diagnostic test questions to determine the level of student understanding of algebra material based on gender.

Percentage of Student Diagnostic Test Results Based on Gender The results of the test are described in the table below:

Table 2. Diagnostic Test Results Per Question Item of Male Students

No	Number of male students Who answered correctly	Percentage	Number of male students who answered incorrectly	Percentage
1	12	75.00%	4	25.00%
2	7	43.75%	9	56.25%
3	1	6.25%	15	93.75%
4	8	50.00%	8	50.00%
5	6	37.5%	10	62.5%

Table 2 shows that the number of students who answered the question with the most correct answer at the level of 75.00% was the first, and the number of students who answered the question with the least correct answer at the level of 6.25% was the third and the student who answered the most incorrect answers was ranked third with a percentage of 93.75%. It was concluded that students answered the question with the third answer and on average were the most wrong because they did not answer the question carefully. The following are the diagnostic test results per question item of female students.

Table 3. Diagnostic test results per question item of female students

No	Number of female students Who answered correctly	Percentage	Number of female students who answered incorrectly	Percentage
1	10	76.92%	3	23.08%
2	5	38.46%	8	61.54%
3	2	15.38%	11	84.62%
4	6	46.15%	7	53.85%
5	8	61.53%	5	38.47%

In table.3 it can be seen that 76.92% of students who answered the question with the most correct answer were question number 1 and 84.62% of students answered the question with the most incorrect answer. This can be caused by students not being careful in solving the test questions given, namely about algebraic calculation operations. Here is one of the students' solutions in doing the problem. Question nomor 1 the result of $(3p + q)(2 - p)$ is:

$$\begin{aligned}
 &\text{Hasil dari } (3p + q)(2 - p) \text{ adalah} \\
 &= (3p + q)(2 - p) \\
 &= 6p - 3p^2 + 2q - qp \\
 &= 3p^2 + 8pq - qp
 \end{aligned}$$

Figure 1. Question nomor 1

There were some errors in the students' answers. That is, students do not answer questions carefully. The answer should be $-3x^2 + 6y^2 - 2xy - pq$ because all these terms have different variables or terms. It would help if you operated again. Question no 2. If it is known that $A = 2x^2 + 4xy - 6y^2$ and $B = -5x^2 - 7xy + 7y^2$, then $A-B$

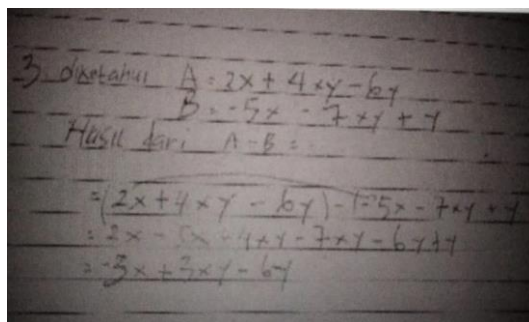


Figure 2. Question No. 2

For Question No. 2, many students fill in the questions with the wrong answers because they ignore them. The student's mistake in solving the problem is to calculate algebraic addition and subtraction operations directly, without paying attention to positive or negative signs and not paying attention to variables. As a result, students will get the final result wrong. Analysis of students' interest in learning mathematics on gender-based algebra material is based on indicators of learning interest according to (Hendriana et al., 2017), such as excitement, student interest, student engagement, and perseverance. Have a diligent and disciplined study plan for learning and solving mathematical problems. The following is an analysis of the percentage of learning interest of 40 grade VIII students based on gender in algebra learning.

Table 4. Percentage of student learning interest attitude scale by gender

No	Gender	Indicators					Average
		Indicator 1	Indicator 2	Indicator 2	Indicator 2	Indicator 2	
1	Man	61.25%	58.44%	61.72%	52.08%	66.15%	59.93%
2	Woman	76.54%	67.69%	69.71%	76.28%	76.28%	73.30%

In table.4 percentage of the scale of student learning interest attitudes by gender, there is a percentage difference between students by gender. The percentage in the first indicator of male students is 67.50%. While in female students there are 76.54%. In the second indicator, there is 67.69% percentage of interest in learning in female students while in male students there is 67.81%. In the third indicator, the percentage of interest in learning in female students is lower than male students, which is 73.44%. While in female students there are only 69.71%. In the fourth indicator, 76.28% of the percentage of interest in learning in female students is more significant than male students, which is 65.10%.

Moreover, in the fifth indicator, the percentage of interest in learning for female students is 76.28%, while in male students there is 66.15% lower. Based on the average percentage on

the scale of student learning interest attitudes based on male and female gender, in grade VIII SMPN 1 Carenang, there is a difference, namely the percentage of female students is 73.30%, while in male students there are 59.93%. This shows that female students are more interested in learning mathematics class VIII algebra material than male students.

In table.4 the percentage of student interest in learning interest attitudes is scaled by gender, with differences in the percentage of students. The percentage of male students in the first indicator is 67.50%. As for female students, it is 76.5%. In the second index, the percentage of learning interest of female students is 67.69%, male students are 67.81%, and in the third index, the percentage of learning interest of female students is higher than 73, % of male students. Also low. As for female students, it is only 69.71%. In the fourth indicator, 76.28% of female students have a higher level of interest in learning than male students, which is 65.10%. In the fifth indicator, the percentage of female students' interest in learning is 76.28%, while the percentage of male students is lower at 66.15%. Based on the average percentage of the Learning Interest Scale of Grade VIII Students of SMPN 1 Carenan by gender, there is a difference in the percentage of female students of 73.30%, while the percentage of male students is 73.30% to 59.93%. This shows that female students are more interested in learning mathematics class VIII algebra material than male students.

D. CONCLUSIONS AND SUGGESTIONS

The issue obtained from our group's research survey is that SMPN 1 Carenang obtained information on the school's vision is to produce alums who excel, have a high interest in learning mathematics and motivation to learn mathematics that mathematics is not complicated, so that the vision is realized then SMPN 1 Carenang must realize the mission first, namely: (1) Realizing Interest and Motivation in Mathematics Learning; (2) Various sharing of students' potential and creativity optimally; (3) provide religious values as well as the personality of learners; and (4) polite behavior, a sense of kinship in realizing school culture in realizing the vision and mission, so one of the efforts that needs to be done is to increase teacher knowledge about learning methods, strategies, techniques, examples, and learning approaches, the head of SMPN 1 Carenang said that most female students have a high interest and motivation in learning mathematics compared to male students.

Mathematical communication is one of the learning objectives of the Indonesian mathematics curriculum and one of the proficiency standards for graduate students after elementary school. In addition to communication skills, metacognitive skills contribute to a person's success in understanding math. Differences between women and men occur in almost every field, including in the achievement of learning outcomes. The study confirms communication skills in mathematics and metacognition about gender differences. This study aims to determine the mathematical and metacognitive communication skills of SMPN 1 Carenang students based on gender. Mathematics is taught to prepare students to use mathematics and mathematical reasoning in everyday life. In mathematics research, there are still many students who regard mathematics as a boring subject. Based on this gender aspect in mathematics learning is a concern, gender differences not only cause differences in skills, but also on the acquisition of math skills, many say that men are not entirely successful in

learning mathematics compared to women. Men are rarely as interested in theoretical questions as women are. Women are more interested in practice than theoretical but on the other hand not a few female students succeed in math skills.

REFERENCES

- Ajai, J. T., & Imoko, B. I. (2015). Gender Differences in Mathematics Achievement and Retention Scores: A Case of Problem-Based Learning Method. *International Journal of research in Education and Science*, 1(1), 45-50.
- Chen, S. C., Yang, S. J., & Hsiao, C. C. (2016). Exploring student perceptions, learning outcome and gender differences in a flipped mathematics course. *British Journal of Educational Technology*, 47(6), 1096-1112.
- Githua, B. N., & Mwangi, J. G. (2003). Students' mathematics self-concept and motivation to learn mathematics: relationship and gender differences among Kenya's secondary-school students in Nairobi and Rift Valley provinces. *International Journal of Educational Development*, 23(5), 487-499.
- Høgheim, S., & Reber, R. (2019). Interesting, but less interested: Gender differences and similarities in mathematics interest. *Scandinavian Journal of Educational Research*, 63(2), 285-299.
- Hyde, J. S., Lindberg, S. M., Linn, M. C., Ellis, A. B., & Williams, C. C. (2008). Gender similarities characterize math performance. *Science*, 321(5888), 494-495.
- LeGrand, J. (2013). Exploring gender differences across elementary, middle, and high school students' science and math attitudes and interest (Doctoral dissertation, Northeastern University).
- Samuelsson, M., & Samuelsson, J. (2016). Gender differences in boys' and girls' perception of teaching and learning mathematics. *Open Review of Educational Research*, 3(1), 18-34.
- Stoet, G., & Geary, D. C. (2013). Sex differences in mathematics and reading achievement are inversely related: Within- and across-nation assessment of 10 years of PISA data. *PLoS ONE*, 8(3), e57988.