

THE ANALYSIS OF STUDENT'S ABILITY OF MATHEMATICAL COMPREHENDING BASED ON GENDER IN RECTANGULAR MATERIAL IN SMP NEGERI 1 BANDAR SEI KIJANG CLASS VII₁

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Abstract- This study aims to determine students' mathematical understanding and the ability to see the difference between students' mathematical understanding the ability of male and female on the material rectangular. This study is a descriptive analysis research. The study was conducted in the academic year 2013/2014 in SMP Negeri 1 Bandar Sei Kijang. Subjects in this study were students VIII which consisted of 12 male students and 12 female students with academic skills that same level of ability. In order to determine the level of mathematical understanding in students' abilities, then they are given a mathematical comprehension tests. The results showed that the ability of mathematical understanding of male students is higher than the ability of mathematical understanding of female students it can be seen from the mean or average value obtained from the SPSS. The average value of male students is 72.2217 and the average value of female students is 69, 7925. But the data did not show any significant differences in the ability of mathematical understanding between male students and female students.

Keywords: understanding of mathematical ability, male, female

1. INTRODUCTION

Mathematics is a basic science plays an important role both in everyday life and in the development of science and technology. In line with the National Education Standards [2] also states, "mathematics is a universal science that underlies the development of modern technology, has an important role in a variety of disciplines and promote the power of human thought". But mathematics is not an easy subject for most students. Although students memorize multiplication and division, they are sometimes confused when dealing with word problems involving multiplication and division. It can be caused students difficulty understanding word problems.

Interest in studying mathematics Education Unit Level Curriculum (SBC) that students can have the ability to understand mathematical concepts, explain the link between the concept and apply the concept or algorithm, accurately, efficiently and accurately solve problems. Before students are able to understand the mathematical concepts that students must first perceive, where the process of perception that understanding comes after getting the information.

[4] asserted, one of the most widely accepted ideas in mathematics education is that students should understand mathematics. [10] starts her book on understanding in mathematics with similar words: "how to teach so that students understand?, What exactly don't they understand? What do they understand and how?". [6] mention the interest towards teaching and learning mathematics with understanding, which is shown in recent curricular reforms in many countries.

The importance of the idea of understanding for mathematics education is emphasized in recent works by [10], amongst others. Nevertheless, characterizing understanding "in a way which highlights its growth, and identifying pedagogical acts which sponsor it, however, represent continuing problems" [6].

The book by [10] represents an important step forward, when discerning between understanding acts and processes and when relating "good understanding" of a mathematical situation (concept, theory, problem) to the sequence of acts of overcoming obstacles specific to this situation. Nevertheless, we think that taking the notion of object as primitive and deriving meaning from understanding cause some difficulties in analyzing the processes of assessing students' understanding.

[9] states "to solve mathematical problems students require an understanding of an individual nature, because every student has different abilities in understanding mathematical concepts given by teachers". Similarly, Kilpatric in [1] says, "also called a conceptual understanding of mathematical

understanding". Thus, one's ability to be possessed by students after learning of mathematics is the ability of mathematical understanding.

[11] states that "mathematical understanding is an understanding that includes recognize, understand and apply the concepts, procedures, principles and ideas of mathematics". Similarly, [1] states that "understanding is mathematically related to the ability to understand the concept, operation, and connection or relation in mathematics". According to [8] "understanding not only of the fact, however, with regard to the ability to explain, explain, interpret or ability to capture the meaning or significance of a concept".

Therefore, based on the above description, the authors conclude that the mathematical understanding is the student's ability to understand, implement, concepts and procedures in learning mathematics.

According [9], "in learning activities in the classroom, students are expected to be directly involved both men and women. Each individual along with gender each have traits of character, intelligence, character, and so different ". Kartono in Setriani (2014) also says that "women are more interested in the problems of concrete practical life, while men are more interested in abstract terms." While [3] identify the intellectual and emotional differences between men and women can be seen in the following Table 1.

Table 1. Differences in emotional and intellectual male and female

Male	Female
<ul style="list-style-type: none"> ▪ Very aggressive and independent ▪ Not Emotional ▪ More objective ▪ Very fond of exact knowledge ▪ More logical 	<ul style="list-style-type: none"> ▪ Not too aggressive and not too independent ▪ More emotional ▪ More subjectively ▪ Less please exact ▪ Less logical

According to the Table above, it appears that men are more like engineering classes. Mathematics is one of the engineering classes. Therefore, many psychological experts believe that men will be more successful than women studying mathematics.

One branch of mathematics that is closely related to everyday life and requires a high understanding in the troubleshooting process is geometry. Material geometry used by researchers to analyze student understanding is a two dimensional material that is flat wake quadrilateral.

This study aims to find a Figure of the ability of mathematical understanding between male students and female students, and to know the ability of students' mathematical understanding in terms of gender in the classroom VIII SMP 1Bandar Sei Kijang in the school year 2013/2014 Semester.

To analyze the mathematical understanding of students by sex in two-dimensional geometry of the material flat wake quadrilateral researchers used four of the seven indicators adopted mathematical understanding of [1] as follows: (1) declare the concept correctly; (2) classify objects according to certain properties (in accordance with the concept); (3) apply the concept or problem-solving algorithm; and (4) linking the various concepts (internal and external math).

2. METHODS

The research was conducted in SMP Negeri 1Bandar Sei Kijang. The population in this research is all class VII in the Academic Year 2013/2014 Semester, while the sample is VIII class by the number of students as many as 24 students consisting of 12 male students and 12 female students. Determination of the sample in this study conducted by random sampling technique.

The instrument in this research is to test the ability of mathematical understanding. After that will be measured tests the ability of mathematical understanding by adopting guidelines for scoring weights of Abraham in [7] as shown in the following Table 2.

Table 2. Guidelines scoring understanding mathematical ability test

Comprehension level	Criteria	Score
Got it entirely	Answer correctly and contain all of the scientific concepts	4
understood partially	Answer correctly and containing at least one scientific	3

	concept and does not constitute an error concept	
misconceptions partially	Answer provide partially correct information but also shows the concept of error in explaining	2
misconceptions	Answer indicate errors fundamental understanding of the concepts learned	1
Do not understand	Answer wrong, irrelevant or simply repeat the answer to questions and answers empty	0

Then to find the value earned by each student used the following formula:

$$\text{Earned value} = \frac{\text{Scores obtained}}{\text{maximum score}} \times 100\%$$

Percentage of students' mathematical understanding capabilities for each indicator is calculated using the formula:

$$\% \text{ KPM each indicator} = \frac{\text{number of students' scores for each indicator}}{\text{the maximum score for each indicator} \times \text{many students}} \times 100\%$$

The percentage of the score obtained is then qualified to determine how high the ability of understanding mathematical 4siswa. Here are the results of the qualifying Table percentage score analysis.

Table 3. Qualifications mathematical understanding students

Percentage range (%)	Value	Category
$90 \leq x \leq 100$	A	Very high
$80 \leq x < 90$	B	High
$65 \leq x < 80$	C	Enough
$55 \leq x < 65$	D	Low
$00 \leq x < 55$	E	Very Low

Source Categories understanding: Suratman (2010: 4)

Note: x = the percentage of the value obtaine

Then to see the differences in the ability of mathematical understanding between the male students to female students will be analyzed using t-test two independent samples with SPSS 20.

3. RESULTS AND DISCUSSION

To determine the ability of test results mathematical understanding of students, is presented in the following Table 4.

No	Code of Student	Gender	Total Score	Value	Code of Student	Gender	Total Score	Value
1	L-01	Male	18	75,00	P-01	Female	21	87,50
2	L-02	Male	15	62,50	P-02	Female	15	62,50
3	L-03	Male	18	75,00	P-03	Female	14	58,33
4	L-04	Male	18	75,00	P-04	Female	18	75,00
5	L-05	Male	19	79,17	P-05	Female	17	70,83
6	L-06	Male	17	70,83	P-06	Female	22	91,67
7	L-07	Male	17	70,83	P-07	Female	16	66,67
8	L-08	Male	15	62,50	P-08	Female	17	70,83
9	L-09	Male	19	79,17	P-09	Female	15	62,50
10	L-10	Male	17	70,83	P-10	Female	15	62,50
11	L-11	Male	20	83,33	P-11	Female	18	75,00
12	L-12	Male	15	62,50	P-12	Female	18	75,00

Then to know the difference improvement of mathematical problem solving ability among male students to female students through problem solving ability test test-t. hasilnya can be seen in the following Table 5.

Group Statistics					
	Gender	N	Mean	Std. Deviation	Std. Error Mean
Nilai	Male	12	72.2217	6.95736	2.00842
	Female	12	69.7925	10.82541	3.12503

The Table above shows the Mean or average of each sex, ie the male students with a standard deviation value 72.2217 6.95736 which is higher than female students with a standard deviation that is 69.7925 10.82541.

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Value	Equal variances assumed	.933	.344	.654	22	.520	2.42917	3.71477	-5.27480	10.13313
	Equal variances not assumed			.654	18.763	.521	2.42917	3.71477	-5.35260	10.21093

sig: p < 0,05 → data tidak homogen
sig: p > 0,05 → data homogen

sig: p ≤ 0,05 → ada perbedaan pada taraf sig 5%
sig: p > 0,05 → tidak ada perbedaan

Based on the calculation in the above Table by using t-test results are obtained for homogeneity, which is seen that $F = 0.933$ ($p = 0.344$) for $p > 0.05$, it can be said that there is no difference in the variance in the data intelligence men and women (data equal / homogeneous).

Because homogeneous, then use the first line is the t value 0.654 at 22. df df the t test is $N-2$, which is on the case $24-2 = 22$. Then by looking at the value of Sig (2 tailed) or p value. In the Table above shows that the p value of 0.520 where > 0.05 . Because > 0.05 then there is no statistically significant difference or significant at 0.05 probability, so H_0 accepted. It can be concluded that there is no difference between students' mathematical understanding the ability of males to females.

The magnitude of the average or mean difference between the genders indicated in the column Mean Difference, namely 2.42917. Because it is positive, it means that male students had higher mean than female students.

4. CONCLUSIONS

Based on the results of the study it can be concluded that male students have the ability to better mathematical understanding than women as seen from the results of the acquisition value of the average. But there are differences in the ability of understanding mathematical significant difference between boys and girls. Researchers suggest using a larger sample, giving a balanced composition of the items on all indicators, and forming a homogeneous group that seem more significant differences between the sexes.

REFERENCES

- [1] Afgani D, Jarnawi. 2011. *Analisis Kurikulum Matematika*. Jakarta. Universitas Terbuka
- [2] BSNP (Badan Standar Nasional Pendidikan). 2006. *Standar dan Kompetensi Dasar*. Jakarta: Depdiknas.
- [3] Handayani dan Sugiarti. (2002). *Konsep dan Teknik Penelitian Gender*. Universitas Muhammadiyah Malang. Malang.
- [4] Hiebert, J. & Carpenter, Th. P. (1992). Learning and teaching with understanding. In: D. W. Grouws (Ed.), *Handbook of research in teaching and learning of mathematics* (pp. 65-97). New York: Macmillan.
- [5] Koyama, M. (1993). Building a two axes process model of understanding mathematics. *Hiroshima Journal of Mathematics Education* 1: 63-73
- [6] Pirie, S.E.B. & Kieren, T. E. (1994). Growth in mathematical understanding: How can we characterize it and how can we represent it?. *Educational Studies in Mathematics*, 26 (3): 165-190.
- [7] Rohana, dkk. 2009. *Penggunaan Peta Konsep dalam Pembelajaran Statistika Dasar di Program Studi Pendidikan Matematika FKIP Universitas PGRI Palembang*. Jurnal. Universitas PGRI Palembang.
- [8] Sanjaya, Wina 2010. *Kurikulum dan Pembelajaran : Teori dan Praktik Pengembangan Kurikulum Tingkat Satuan Pendidikan (KTSP)*. Jakarta : Prenada Media Grup.
- [9] Setriani, Erni Hastutik. 2014. *Hasil Analisis Pemahaman Geometri Siswa Berdasarkan Jenis Kelamin*. Sidoarjo: Jurnal Pendidikan Matematika STKIP PGRI. ISSN: 2337-8166
- [10] Sierpinska, A. (1994). *Understanding in mathematics*. London: The Falmer Press.
- [11] Sumarmo, Utari. 2013. *Kumpulan Makalah: Berpikir dan Disposisi Matematik serta Pembelajarannya*. Bandung: UPI.
- [12] Suratman, Dede. *Pemahaman Konseptual dan Pengetahuan Prosedural Materi Pertidaksamaan Linier Satu Variabel. Siswa Kelas VII SMP (Studi Kasus Di MTs Ushuluddin Singkawang)* Dalam [Http jurnal.untan.ac.id/index.php/jpdpb/article/download/3512/3552/25/01/2014/20.00](http://jurnal.untan.ac.id/index.php/jpdpb/article/download/3512/3552/25/01/2014/20.00) WIB

