

Students' Understanding of Geometry: Points and Line

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Abstract The aim of this study is to find out kind of mistakes that students make in geometry, especially in points and line materials. The research subjects are the Geometry class students at Mathematics Education Study Program, University of Timor. This research is a qualitative descriptive study. The data collection techniques used are observation, tests, and interviews. Based on the results of the study, it was found that Students still make mistakes in solving geometry problems due to their low understanding in points and lines material. As for what causes this to happen is the inability of students to understand the concept and even ignorance of students regarding the material

Keywords: Geometry, Geometry Problems, Points and Lines.

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1. Introduction

The mathematics ability of students in the Mathematics Education Study Program at the University of Timor is very diverse. This will affect their ability to adapt to the level of study material in each subject which will be increasingly difficult. One area of study that has received enough attention in the field of Geometry. Maifa [1] found that the fifth-semester students of the University of Timor's Mathematics Education Study Program have difficulty in studying Transformation Geometry because their poor basic geometry skills. This ability should be obtained at the High School level. In line with this, students' difficulties in learning geometry were also caused by learning experiences at the previous school level [2].

Yuwono [3] in his research found the condition of students where students have difficulty applying the similarity concept of plane figures to solve problems. In addition, students also have difficulty in understanding the concept of height and base of parallelogram, and also proving the formula of the area of a triangle. Furthermore, at the level of geometry studies, students also have difficulty in proving in parallel and perpendicular material [4]. The errors that occur when solving analytic geometry problems namely concept errors, strategy errors, arithmetic errors, and systematic errors [5].

It is deemed necessary to conduct a study to investigate students' difficulties in basic geometry material. Further, this result of this study not only as a initial step for lecturer to provide action learning in class but also as a reference for making appropriate teaching materials used in the Mathematics Education Study Program at the University of Timor

2. Method

This research is qualitative research which aims to analyse the difficulties of students in Geometry material, especially points and lines. It carried out on a sample of students in Mathematics Education Study Program at the University of Timor. This kind of research is also called descriptive qualitative research. The data collection techniques used are observation, tests, and interviews.

3. Result and Discussion

Students are given several geometry problems to work on. After that, the results of student work are confirmed by interviewing researchers with students. One of the questions given to students is the matter of Geometry about Reflection which includes points and lines.

Problem: There are 3 dots. A, B, and C. Point A has a image called P (A), Point B has a image called P (B), and Point C has a image called P (C). If the image of A is the midpoint between A and B, and P (A) is crossed by a line containing point C, then draw the position of points A, B, and C "

After the student work is collected, the researcher then reduces the data by looking at the work of students who have errors. It aims to see the extent of student understanding of points and lines

1. Students understand the "midpoint" like a triangle, where the midpoint is the point above (P (A)) from between the two points below (points A and B). Then immediately draw a line from point P (A) and put point C on that line. In this case, students understand that P (A) is crossed by a line containing point C.

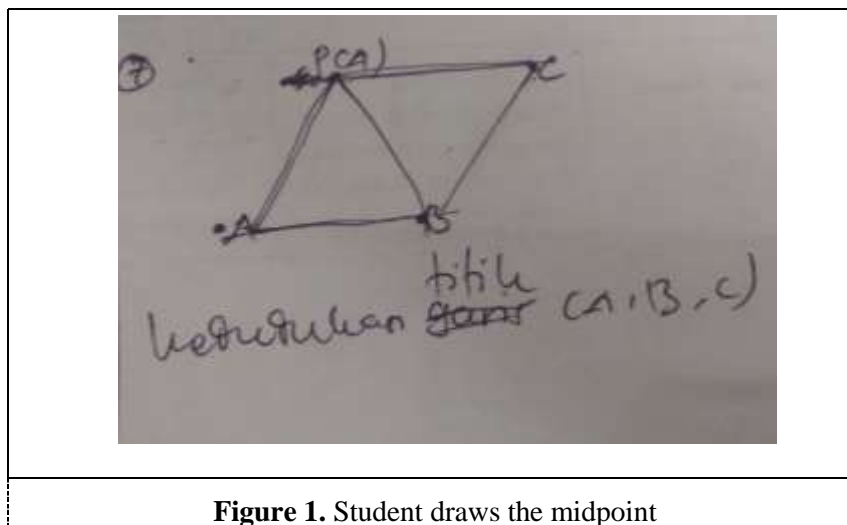


Figure 1. Student draws the midpoint

The figure 1 show that students have not and/or do not know the concept of the midpoint. Students create their understanding of points in an unusual form.

2. Students understand P (A) as the midpoint AB, but then students want to draw a line from point P (A) to the AC line segment as an understanding of the statement P (A) across the line containing point C.

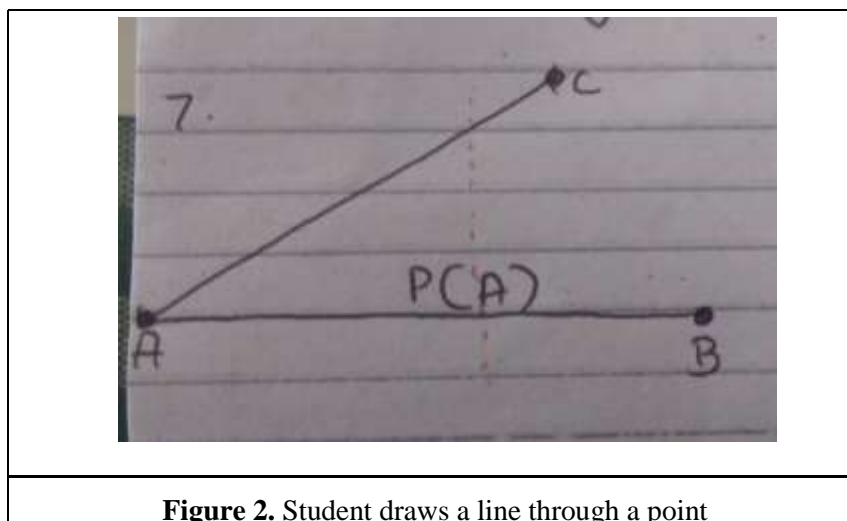


Figure 2. Student draws a line through a point

This result shows the inability of students to define an situation where a point is crossed by a line. Students then make a dotted line that is not meaningful, only if the line can pass through the point P (A)

and the line contained point C. Furthermore, it was found from the results of the interview that the mistakes made by students were the students' ignorance of points and lines (this was caused by students not knowing at all). Besides, students still have difficulty realizing the information they have obtained with a visual picture in their minds, then expressing it in the form of pictures.

This is in line with research [1] that students not only did not understand the midpoint between two lines but also did not understand the definition of lines and line segments. This inability is caused by ignorance and students' lack of understanding of the concept of geometry, in this case, it can also be said that students are not intact in identifying what is asked about the problem [6].

4. Conclusion

Students still make mistakes in solving geometry problems due to their low understanding in points and lines material. As for what causes this to happen is the inability of students to understand the concept and even ignorance of students regarding the material. It can be said in this case that students have poor basic geometry skills.

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