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## STUDENTS' CURIOSITY TO FIND THE AREA OF KITE SUPPORTED BY GEOGEBRA

Decy Pramita Sari Yusna

Syiah Kuala University, Banda Aceh, INDONESIA

Email: [decypramita\\_01@yahoo.com](mailto:decypramita_01@yahoo.com)

### Abstract

*The purpose of this study is to determine the curiosity of students to find out area of kite supported by GeoGebra. The samples of this study are 26 students of 7<sup>th</sup> grade. The students were introduced to GeoGebra to find out the area of kite. GeoGebra is one of the software as a media of learning mathematics that has many features and easy to use. In this research, the use of GeoGebra is also discussed with existing examples of finding the area of kite. The instrument is worksheets and students' reflections. The result of experiment shows that learning mathematics with the support of GeoGebra can foster the curiosity of students. Overall, the curiosity of students is in good category.*

**Keywords:** Curiosity, the formula of kite area, GeoGebra software.

### INTRODUCTION

Curriculum of 2013 demands teachers to be more creative to educate and teach students to achieve the objectives of the curriculum in general and the objectives of learning in particular. One of the objectives is the use of technology. According to Kamariah (2010, pp. 91-99), technology science contributes greatly to creating good learning especially in the field of teaching and learning processes of mathematics. The use of ICT media aims to reduce learning difficulties caused by the abstract object of study in mathematics. The software that can be developed into a medium of learning mathematics in this study is Geogebra.

According to Wisna (2012), GeoGebra is mathematics learning software developed to support the learning process. While Hohenwarter (2008) say that GeoGebra is software to help students in learning geometry and algebra concepts. This is why the writer wanted to use GeoGebra software to assist students in finding out formula for the area of the kite.

The use of technology can foster the curiosity of students towards mathematics, the curiosity of the students themselves need to be developed not only on positive things. According to the Kemendiknas (2010, p. 10) curiosity is attitude and actions that are always working to find out more depth and breadth of something learned, seen, and heard. A strong curiosity is motivation for the scientists. But curiosity is one of the values of character education that is programmed by the Ministry of National Education to develop for the students. According to Utami (1992, p. 88) curiosity is the students' motivation to learn more, ask lots of questions, and always pay attention to people. Students who have a high curiosity towards the material can gain more knowledge than students who are just waiting for an explanation from the teacher. This will certainly have an impact on student learning outcomes. Mustari (2013) states that to cultivate the curiosity of students, they should be given the freedom to make and serve their own curiosity. Students are only given ways to

find out answers to the questions they get. It can be concluded that curiosity does not just show up to prove something that already exists but also to discover new things.

Based on the above description, then the research questions of this study is "How curious are the students to find the area of kite supported by Geogebra?"

## METHODS

This study was conducted in order to find out the formula of kite area with the help of GeoGebra software in MTsN (Islamic Junior High School) for 2x40 minutes. The samples in this study are 26 students. This trial used a descriptive approach that attempted to describe the object under investigation in accordance with the purpose (Sukardi, 2009).

This study aims to determine the curiosity of students in finding out formula of kite area with the help of GeoGebra software. It needs the data that are the record of students' reflection during the learning process to achieve these objectives. This data was obtained through the records of teachers based on the results of experiments performed in class. The curiosity data of students obtained adapted to videotape and observer's record.

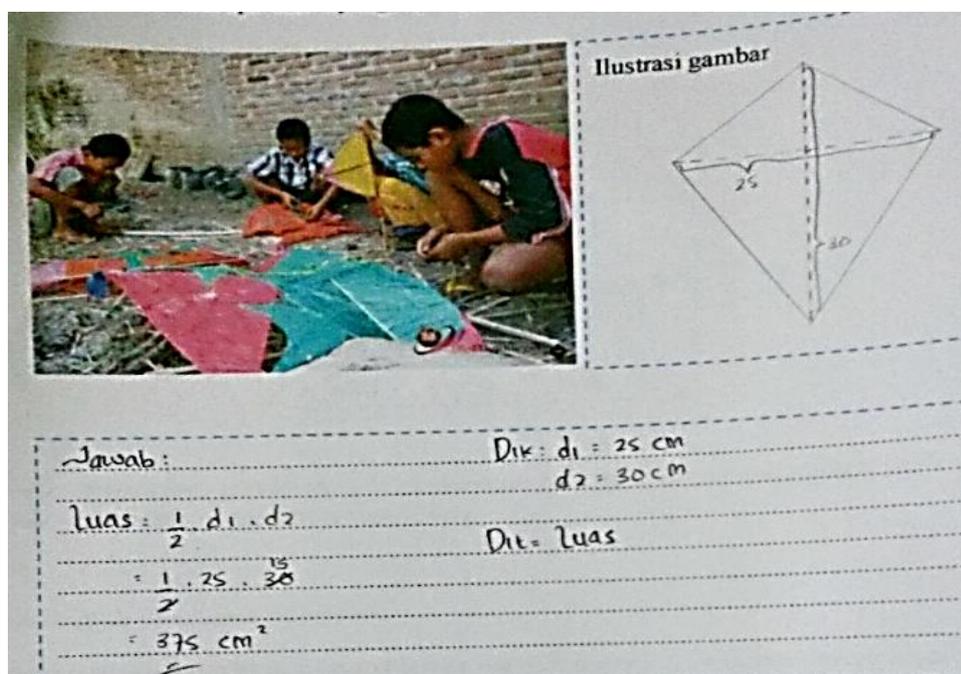
The indicators of curiosity in this study are the adaptation of the Kemendiknas (2010, p. 34) as shown below.

**Table 1.** Indicators of curiosity

Value	Indicators
Curiosity	Asking questions or reading source beyond textbook material related to the lesson.
	Reading or discussing about the issues given.
	Inquiring about the problems given and new technologies.
	Asking about anything related to the subject matter but beyond that covered in class.

## RESULTS AND DISCUSSION

In this study, the writer used experiments guided by LKS (worksheets). The worksheet contains questions that provoke students' curiosity to try learning about the material in more depth and breadth. The picture below is an example of student's answer of how to find out the formula of kite area:



**Figure 1.** Student's work on the questions with the formula that has been known before.

Ingat!  
Rumus Luas  
Persegi Panjang

Dari hasil gambar tersebut dapat diketahui bahwa satu layang-layang sama dengan setengah persegi panjang. Jadi rumus layang-layang menurut persegi panjang yaitu:

$$\frac{1}{2} \cdot (p \cdot l) = \frac{1}{2} \cdot AC \cdot BO$$

$$= \frac{1}{2} \cdot d_1 \cdot d_2$$

Figure 2. A student completed the proof of formula of kite area with the help of GeoGebra software.

In Figure 1, the achievement of the students' objective is only on the question and the already known formula, but if asked about evidence, they were still confused. While Figure 2 shows that students still cannot understand if a rectangle can be formed by two triangles. Their understanding to write formula is good, but students were confused after exploring the formula. Actually, there are orders and clues in students' worksheets to foster their ideas.

The atmosphere in classroom during the learning process looked less conducive; it was because the students were rarely involved in the invention of the formula. In addition, it was also the first time for students using the software, so that many students were asking and calling the teacher to guide their groups.

The writer assessed the character of the students in learning activities in the form of observational assessment of curiosity assessed by the writer as the teacher directly and reassured with full video of learning process along with the observer team.

Data on students' attitudes observation in learning during one meeting expressed as a percentage. The data are briefly presented in the table. Rates of students' curiosity when using GeoGebra software to find out the area of a kite in class VII 8 MTsN Model.

Table 1. Percentage and average rate of students' curiosity attitudes with the help of GeoGebra on kite material.

Attitude	Category	Number of students	Number of students percentage	Quality of attitude	Average
Curiosity	Very good	18 students	48.6 %	18 x 4 = 72	3.24 (GOOD)
	Good	12 students	32. 43 %	12 x 3 = 36	
	Not good enough	6 students	16. 21 %	6 x 2 = 12	
	Absent student	1 students	2.71 %	1 x 0 = 0	

Based on Table 1 above, it shows that the aspect of students' curiosity attitude is 3.24, which is in Good category. At the end of the learning, the teacher gave reinforcement to the students and then they reflected on their learning. Here are some of the students' comments about the reflection questions.

(1) Apa yang kamu pelajari hari ini?  
Hari ini saya mempelajari bahwa layang-layang dapat diketahui rumusnya dari rumus persegi panjang dan dari segitiga.

(1) Apa yang kamu pelajari hari ini?  
Hari ini kami belajar layang-layang yaitu bangun yang sudutnya berimpit dan merupakan 2 gabungan segitiga, rumus-rumus, menggambar layang-layang, menyelesaikan soal cerita.

Figure 3 continued...

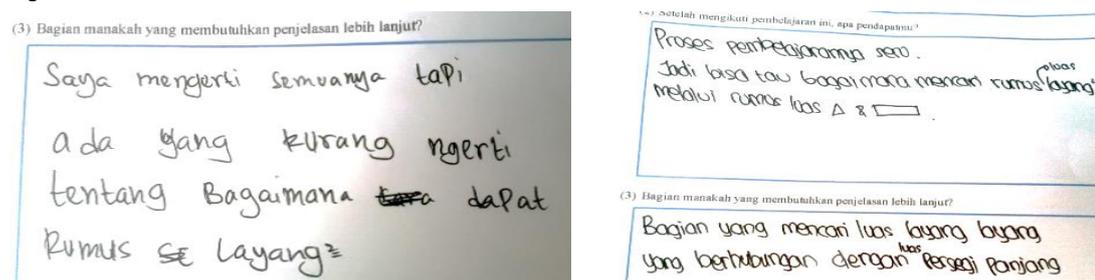


Figure 3. Students' reflections.

Based on the students' reflections, the students' answers are more dominant to 'find out how to discover new formulas'. Therefore, they were only able to answer the questions where the formula have been determined.

The weaknesses of test device and revisions are:

- The students were not accustomed to finding out the formula.
- It was the first time for the students using the software, so they were panic when the teacher was demonstrating.
- The time provided was relatively short, only 2x40 minutes, so that the learning process seemed in a hurry.
- The teacher could not get opportunity to conduct students' test.

## CONCLUSION

The conclusions of this study are: (1) GeoGebra software greatly assisted students based on the students' comments that were written in students' reflections, (2) According to the students' weaknesses who do not often find out a formula for the manner of solving an existing formula, and (3) in terms of the achievement of learning objectives, it was indicated that GeoGebra software can foster the curiosity of students in learning mathematics.

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