Aurelia: Jurnal Penelitian dan Pengabdian Masyarakat Indonesia
E-ISSN: 2964-2493 P-ISSN: 2962-0430
Vol. 2 No. 2 July 2023

# Difficulties of Elementary School Students in Solving Line and Angle Material Problems Using a Protractor

**Galuh Nur Insani[1] Haldini Reygita[2] Mutia Ade Syafitri[3] Deti Rostika[4]**
Elementary School Teacher Education Study Program, Universitas Pendidikan Indonesia, Bandung City, West Java Province, Indonesia[1,2,3,4]
Email: galuhnurinsanii@upi.edu[1] haldinireygita@upi.edu[2] 2102737@upi.edu[3] derosti@upi.edu[4]

**Abstract**
Mathematics is a structured science which includes the basics of calculating, measuring, and depicting the shape of learning objects. Mathematics itself has a uniqueness that makes it different from learning in general. Information was obtained that students had difficulty learning geometry on things that were more conceptual in nature. The purpose of this study was to be able to find out the extent to which students' ability to solve problems measuring lines and angles using a protractor. This study used a type of qualitative research method in which the researcher made observations and collected data at one of the elementary schools in the Panyileukan area. Based on the research conducted, it can be seen that there are still many students who have difficulty working on problems measuring lines and angles using a protractor in mathematics.
**Keywords:** Mathematics, Angle, Protractor



## INTRODUCTION

Education is a conscious effort made by adults to those who are considered immature. Education is the transformation of knowledge, culture, as well as the values that develop in one generation so that they can be transformed to the next generation. The concept of education like this is the same as the concept of education that is applied in public schools. Teachers who are considered mature transfer knowledge to students who are considered immature. The teacher transfers knowledge through the subjects being taught. One of the subjects that is always taught from elementary school to the advanced level is mathematics.

Mathematics is a structured science which includes the basics of calculating, measuring, and depicting the shape of learning objects. Mathematics itself has a uniqueness that makes it different from learning in general. Learning mathematics needs to be adapted to students' cognitive development, starting from the concrete to the abstract. Learning mathematics also involves a hierarchical structure that has a higher level and is formed on the basis of existing experience so that learning mathematics which is disjointed will interfere with understanding of the material being studied.

The objectives of learning mathematics conveyed by the teacher must be centered on the basic concepts that students must master and not only so that students can work on the problems given (Badraeni et al., 2020). If students only memorize formulas to work on math problems, then when the teacher changes the difficulty level of the questions, students will find it difficult to work on the questions because they do not understand the basic concepts of the material. These experiences form the basis for teaching students to always complain that mathematics is a difficult and unpleasant subject.

According to Abdussakir (2010), geometry occupies a special position in the mathematics curriculum, because of the many concepts contained in it. From a psychological point of view, geometry is an abstract representation of visual and spatial experience, for example planes,

patterns, measurements and mapping. In addition, according to Abdussakir (2010) stated that achievement in learning geometry in Indonesia is still low. In this case there are several problems in the subject of geometry. According to Rahayu (2013), the problems experienced by students in triangular material include: students are less skilled at using the properties of the number of angles in a triangle to solve problems, students have not been able to understand the meaning of the outer angles of a triangle, students are less skilled at using relationships inside and outside angles of triangles in problem solving, and students tend to only memorize the formulas for the circumference and area of triangles, so they are less able to solve questions related to the circumference and area of triangles. Based on this description, information is obtained that students have difficulty learning geometry on things that are more conceptual in nature. If students do not understand a geometric concept, it is possible that these students will experience difficulties in understanding the next geometric concept.

Difficulties in learning about angles also occur in students at SD 262 Panyileukan, Bandung. Based on the results of observations, it was found that there were some students who had difficulty learning angles using a protractor because they lacked skill and lack of motivation for students to learn about angles. With the above problems, the researcher is interested in knowing the factors that cause students' difficulties in learning mathematics, especially in the use of a protractor in the material of angles and lines. This research is expected to reduce learning difficulties in grade IV, so that these learning difficulties are not sustainable in grade V.

## RESEARCH METHODS

This research uses a type of qualitative research method. Qualitative research is research that intends to understand phenomena about what is experienced by research subjects such as behavior, perceptions, motivations, actions, etc., holistically, and by means of descriptions in the form of words and language, in a special natural context. by utilizing various scientific methods (Moleong, 2012). This research was conducted at one of the public elementary schools in the Panyileukan area, Bandung on May 22. This research was conducted in class IV as many as 25 students. The technique used is to use observation and interviews by giving a questionnaire in the form of a question statement for students regarding calculating the size of the angle that is done using a protractor. The next data the researcher uses documentation to strengthen research data and analysis based on the results of statements and questions and by way of assessing this research, the researcher conducts observations. how to collect data related to his likes or dislikes in mathematics lessons and several other aspects, then provides the material that the researcher has made and the last one gave questions to find out the extent of students' skills in calculating angles using a protractor, then the researcher took two samples to be interviewed regarding the results of their work.

## RESEARCH RESULTS AND DISCUSSION

This research was conducted in class IV of Public Elementary School 262 Panyileukan City of Bandung in mathematics. This research contains the following matters:

1. Pay attention to the explanation of the lines and angles in front. When entering class, students are instructed to pay attention to the material in advance regarding lines and angles, explained how to calculate lines and angles using the protractor that has been provided.
2. Give questions about lines and angles. After explaining material about lines and angles, students are then given questions to work on in groups. The question contains about calculating lines and angles on a sheet of paper which are calculated using a protractor, an example of the problem is as below:

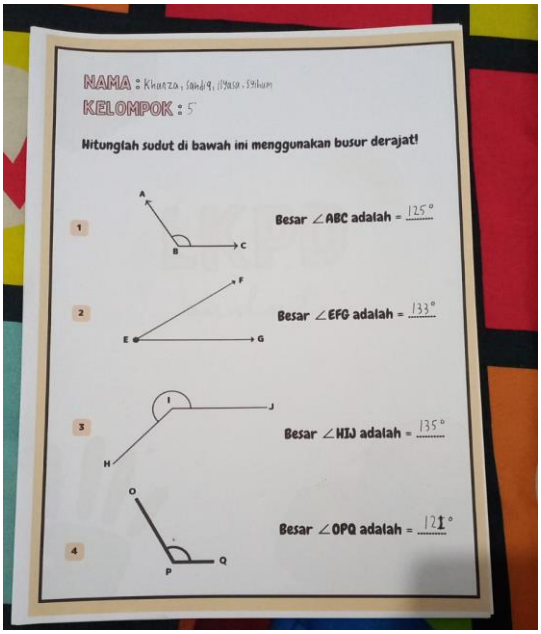


**Figure 1.**

There is a student difficulty in measuring angles because students cannot use a protractor properly (students are less skilled) because so far students have been less actively involved and teachers have dominated the learning process. studied but there are still students who cannot use the protractor properly. In addition to the problem of not being able to use the protractor correctly, students in groups are still not good at working on it, there are some students in their group who do not participate in working on the problem.

During the observation at SDN 262 Panyileukan City of Bandung, the research team had found problems with this material. What the researchers did was to repeat the material that had been explained and tell students how to use the protractor properly, the way the research team also worked in groups (students who the group did not understand, assisted by their group mates) in which students who already understood how to use a protractor told their friends who did not understand, this method was successful because during the lesson the research team was also interspersed with ice breaking or playing games so that the students enjoyed following their lessons.

## Interview Result

Not only researching, but the research team also conducted interviews with 1-2 students who felt they were still unable to use the protractor properly. degrees can also, then students feel they are still not focused when the research team explains in front of the class because the research team's teaching aids are still lacking so students still have difficulty understanding.

## CONCLUSION

The conclusion from this research based on observations and interviews is that there are two types of problems, namely (1) Students who have difficulty calculating angles using a protractor, in this case students feel confused about how to use a protractor, and students are also less precise and skilled in using a protractor , students are still confused where the center of the protractor is located and also in determining the angle of the protractor itself, and students still have difficulty understanding the concept of two intersecting lines and mentioning the relationship between angles on two parallel lines, students felt they were still not focused when the research team explained in front of the class because the research team's

teaching aids were still lacking so students still had difficulty understanding. In this case the researcher has to explain again about the proper use of a protractor, and create groups for students to discuss together (2) The next problem is that in groups there are several students who do not participate in working on group assignments, this results in obstacles in doing assignments. So here the researcher asked the students who already understood to help them. The students who already understood how to use the protractor told their friends who did not understand. This method was successful because during the lesson the research team was also interspersed with ice breaking or playing games so that the students enjoyed following their lessons.

Advice that can be given is that this research is still limited to two types of learning difficulties in the material of angles and lines in using a protractor. Based on the results of this study, it is hoped that other researchers can develop other types of learning difficulties in triangular material and their alternative solutions.

**BIBLIOGRAPHY**

Abdussakir, A. (2009). Pembelajaran geometri sesuai teori Van Hiele. *Madrasah: Jurnal Pendidikan dan Pembelajaran Dasar*, *2*(1).

Deshpande, S. (2013). No Title. *Journal of the American Chemical Society*, *123*(10), 2176–2181. https://shodhganga.inflibnet.ac.in/jspui/handle/10603/7385

Rahayu, N. S. (2013). Eksperimentasi Pembelajaran Matematika Dengan Model Problem Solving Pada Sub Materi Besar Sudut-Sudut, Keliling Dan Luas Segitiga Ditinjau Dari Aktivitas Belajar Matematika Siswa Kelas Vii Semester Ii Smp Negeri 2 Jaten Karanganyar Tahun Pelajaran 2010/20.

Siregar, R., Suwanto, S., & Siagian, M. D. (2021). Analisis Kesulitan Belajar Siswa Dalam Menyelesaikan Soal Matriks. *Jurnal Mathematic Paedagogic*, *6*(1), 31–38. https://doi.org/10.36294/jmp.v6i1.2325

Suryadi, R. A. (2018). *Ilmu Pendidikan Islam*. Deepublish.