

Learning the Concept of Cube Using Cabri 3D V2

Yuli Witanto

*Department of Elementary School Teacher Education, Faculty of Education,
Universitas Negeri Semarang, Semarang, Indonesia*

Email: yuliw64@gmail.com

Abstract—The cube is one of the concepts of building the space that is carried out in elementary school. Build space is defined as an object that has dimensions of length, width and height. In order for students to understand the concept of the cube, an interactive media is needed that can help students understand the concept of the cube. By using the interactive Geometry Room Cabri 3D v2 software, the teacher can show the cube model in the form of solid, transparent, and skeleton models. The cube is a building that has 6 rectangular surfaces. The cube has 12 ribs, 8 corner points, 12 diagonal sides, 4 diagonal spaces. With this software, the concept of the op of opened cubes can be shown. The cube model created can be manipulated by rotating, so students can observe the cube from various sides. The cube is also known as regular plane 6. Related to measurements, the length of the ribs or the surface area of the cube can also be calculated by this software.

Keywords—Cube, Cabri 3D v2.

I. INTRODUCTION

In learning theory it is known that teaching is not just a transfer of knowledge. Knowledge gained by students should be truly understood and become a strong competency that can be used so that it can be used in learning other fields of knowledge or skills that can be used in various situations.

Basically, individually, humans are different, as well as understanding abstract concepts will be achieved through different levels of learning. But a belief that children learn to use media. Even not a few adults who generally understand abstract concepts, but in certain situations still need media too. That's why teaching aids are needed in learning.

The use of media in the learning process is one of the factors that support the success of the communication process in delivering the concepts conveyed by the teacher. Media factors play a very important role for the effectiveness of learning, as stated by experts. Choosing media is a teacher's decision that is done every day that must be done for success in the teaching and learning process. In learning, teaching aids / media are very necessary to support student activities in learning the concepts learned. According to E. Dale in Sadiman (1986), that in cone of experience it appears that direct experience gives the best results. It can be said that the more senses that students use the better the memory of students. Even according to Herminway it was said "Don't tell me about it, the show was to me" (Priyono, 2002).

Given the importance of media in learning, it is not enough for teachers to learn cube concepts only with information. In development psychology, elementary school students are categorized as being in the developmental stage of concrete thinking. In response to this, given the concepts and ideas in mathematics are abstract ideas or ideas, cube concept learning requires media that help children in and analyze cube elements.

This paper is expected to contribute ideas in order to improve the ability of prospective primary school teachers to teach the concept of building a cube space. Regarding the background that students are not easy to understand abstract mathematical concepts, the problem that we will discuss is "How to teach the concept of cube using Cabri 3D v2 interactive media in elementary school?"

II. DISCUSSION

To solve this problem, by reviewing the background, the focus in writing this paper is how to teach Cabri 3D v2 media-assisted cube concepts in elementary schools.

A. Rational Use of Media

Elementary school students in terms of age development according to psychologist Piaget are still in the stage of concrete thinking. With this condition, the existence of the media will be very necessary. By manipulating the media, students can understand the concepts learned.

Basically, individually, humans are different, as well as understanding abstract concepts will be achieved through different levels of learning. But a belief that elementary school children learn through the real world and by manipulating real objects as intermediaries. In fact, not a few adults who generally understand abstract concepts, but in certain situations still need intermediary objects. That's why teaching aids in elementary school are very much needed.

The use of media in the learning process is one of the success factors in the communication process in delivering the concepts conveyed by the teacher. Media factors play a very important role for the effectiveness of learning, as stated by experts. Choosing media is a teacher's decision that is done every day that must be done for success in the teaching and learning process. According to E. Dale in Sadiman (1986), that in cone of experience it appears that direct experience gives the

best results. It can be said that the more senses that students use the better the memory of students. Even according to Hemmingway it was said "Don't tell me about it, the show was to me" (Priyono, 2002).

B. Media in Learning

Media in a broad sense, in principle, is a tool for delivering a message. If the teacher as a learning resource is assisted by other learning resources, and the teacher is still in control, the learning resources are said to be teaching aids the source of learning is an integral part of all learning activities and there is a division of responsibilities on the part of the teacher and other learning resources, then other sources are said to be the media.

There are several meanings of media, including:

- a. Association of Education and Communication Technology (AECT). Media is all forms that are used for the process of distributing information
- b. Lesle J. Briggs (1970) Learning media as "the physical means of conveying instructional content ... books, films, videotapes, etc. (Learning media are physical means for delivering learning content / material such as: books, films, videos and so on) Briggs further stated that the media is "a tool to stimulate students to take place in the learning process
- c. Brown (1976) The media used by teachers or students can influence the effectiveness of the learning and teaching process
- d. NEA (National Education Association) All objects that can be manipulated, seen, heard, read, or discussed along with the instruments used for these activities
- e. Schramm (1977) Learning Media is a messenger technology that can be used for learning purposes From the five opinions above, it can be concluded that the media is everything that can channel messages, which can stimulate the thoughts, feelings and willingness of students so that it can encourage the learning process in itself.

C. Use of Media Cabri 3D v2 in learning cubes

In general, the Cabri 3D V2 program consists of *menus, toolbars, and drawing areas*. In the menu, *File, Edit, Display, Document, Window, and Help* are displayed. The latest information from Cabri can be seen on the official website, www.cabri.com

Make a Cube Image

1. Create a new page by clicking File-> New or ctrl + N
A view will be obtained as shown in Figure
2. Remove the vector that has red, blue, and green colors by clicking once and then clicking delete on the keyboard, so that the following display is obtained.

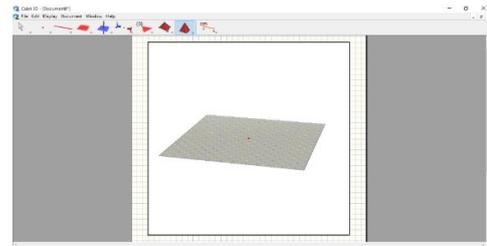


Figure 1. New Worksheet for Cabri 3D v2 without Vector Lines

3. Click the Cube tools to make the cube as shown in the image below.

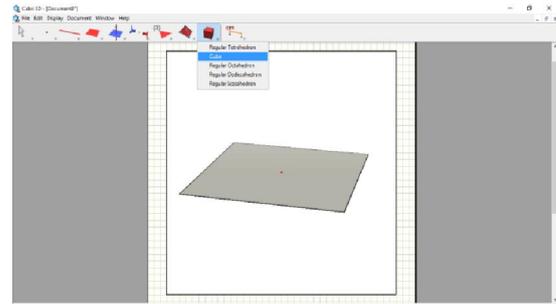


Figure 2. Accessing the Cube Tool

4. Determine the base of the cube, the midpoint of the cube's base, then slide the pointer to determine the size of the cube to be made.

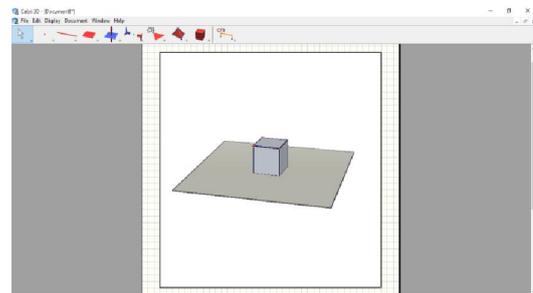


Figure 3. Results of Using the Cube Tool

5. If you want to see the rib cube, right-click, change the surface style to empty. So that the following picture is obtained.

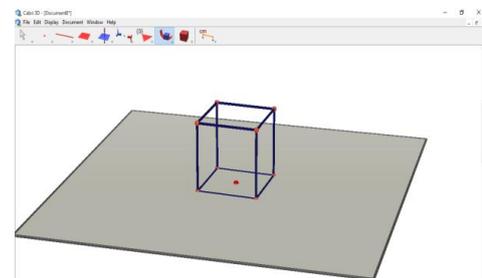


Figure 4. The empty selection results in the surface selection

For other concepts of cubes, for example diagonal side or diagonal space can use the line toolbar and select segment. Click on one of the points in the field and yes with another point from that field across. Likewise with the concept of diagonal space, use the line toolbar, select the segment and click the beginning of the point from the diagonal and the other point from the cube space. Related to the length of the cube rib can be determined by toolbar distance and select length

III. CONCLUSION

From the discussion and background of this paper, it can be concluded as follows:

- 1) The use of media is very important in helping students understand abstract mathematical concepts and the level of thinking of students is to think concrete.
- 2) The use of Cabri 3D v2 interactive media, helps students understand the concept of the cube through an explanation of the concept of the cube and its elements.

REFERENCES

- [1] Aisyah, Nyimas, dkk. 2007. *Pengembangan Pembelajaran Matematika SD*. Jakarta : Dirjen DIKTI.
- [2] Hudojo, Herman, 2005. *Kapita Selekta Pembelajaran Matematika*. Malang : UM Press.
- [3] Karim, Muchtar A, 1988. *Pendidikan Matematika II*. Jakarta: Depdikbud Dirjen Dikti
- [4] Marini, Arita. 2017. *Geometri dan Pengukuran*. Bandung : Remaja Roskakaya.
- [5] Muhsetyo, Gatot, 2007. *Pembelajaran Matematika SD*. Jakarta. Universitas Terbuka
- [6] Nursasongko, Aditya. 2018. *Penerapan Cabri 3D v2*. Adityanursasongko.wordpress.com
- [7] Raharjo, Sadiman dan Anung, H. 1986. *Media Pendidikan*. Jakarta : CV. Rajawali.
- [8] Russ Effendi, 1992. *Pendidikan Matematika*, Jakarta : Depdikbud
- [9] Sa'dijah, Cholis. 1998. *Pendidikan Matematika II*. Jakarta : Depdikbud Dirjen DIKTI.
- [10] Suherman, Erman dkk. 2003. *Strategi Pembelajaran Matematika Kontemporer*. Bandung: UPI Press.
- [11] Walle, John Van De. 2007. *Elementary and Middle School Mathematics*. Terjemahan Suyono. Jakarta: Erlangga.