

THE IMPLEMENTATION OF VIDEO-BASED LEARNING IN PRIME NUMBER MATERIAL TO IMPROVE THE COGNITIVE STUDENTS' ABILITY

Kartiningsih Budiati^{1*}, Siti Mayang Sari², Lili Kasmini³, Akmaluddin⁴

¹²³⁴ Program Studi Penjaminan Mutu Pendidikan, Fakultas Keguruan dan Ilmu Pendidikan, Universitas Bina Bangsa Getsempena, Banda Aceh, 23112, Indonesia

*kart.nfaceh@gmail.com,

ABSTRACT

Students at the elementary school level have difficulty in understanding concepts and solving problems in prime number material so that their scores do not get satisfactory results. Researchers made learning videos as one of the teaching way in which the materials can be used by the educators in the learning process. This study aimed to describe the implementation of video-based learning on prime numbers material to improve students' cognitive abilities. This research used descriptive qualitative design. The subjects of this study were 4th-grade students at SDIT Nurul Fikri Aceh, consisted of 21 students. Teaching and learning using media of YouTube video as the result of the researchers' work was conducted, and an evaluation was carried out at the end of the lesson. The result is that learning mathematics using video media can improve students' cognitive abilities. This is indicated by the percentage of completeness obtaining a result of 90.5% which indicates that students' cognitive abilities in learning mathematics are very high. Based on the results of the study, it was shown that the use of mathematics learning video media as a medium can support learning effectiveness which includes high learning outcomes, good student activity, and positive students' responses. Thus it improved students' cognitive abilities.

Keywords: video-based learning, prime numbers, cognitive

1. INTRODUCTION

The development of information technology has changed the perspective and lifestyle of the Indonesian people in carrying out their activities. The existence of and role of information technology in the education system have brought a new era for the development of the world of education. However, this development has not been followed by an increase in human resources capabilities which also determines the success of education in Indonesia in general. This is more due to the lack of human resources to utilize technology in the educational process, one of which is in making learning media more effective (Budiman, 2017).

Media is a communication tool to streamline the teaching and learning process. The benefits of using this media are expected to attract students' attention and make it easier for students to understand the material. Sohibun and Ade (2017) state that media can be interpreted as all forms and channels of conveying information messages from message sources to recipients that can stimulate the mind, arouse the spirit of attention and willingness of students so that students can acquire the appropriate knowledge, skills or attitudes for the purposes of the information submitted. The media also acts as an intermediary for the teacher to present everything or messages that students cannot see directly, but can be described indirectly through the media (Suryani, 2018).

Many researchers use learning media in the form of learning videos in their research, including those carried out by Akbar and Komarudin (2018) who show the positive results using learning video media assisted by Instagram social media in learning mathematics. The results of the students were evaluated by experts, especially subject matter experts, whose score 88.8 points and media experts with an average score of 93.5 with very decent criteria (Akbar & Komarudin, 2018). Learning mathematics, especially at SDIT Nurul Fikri Aceh, still encounters many problems, such as the low interest of students to be actively involved in learning activities in class which has an impact on low students' learning outcomes. Based on the description above, learning media in the form of video is suitable to be developed in learning about basic concepts in certain fields of knowledge including mathematics. Based on the background of the problems described above, the researcher intends to conduct research on the development of the learning video with the materials of prime number.

2. LITERATURE REVIEW

Learning media consists of various forms, one of which is audio-visual media. Audio-visual media is media that contains elements of sound and also has elements of images that can be seen, such as video recordings, films, and so on. Good learning media is media that is able to activate the students in providing responses and feedback, as well as encourage students to carry out correct practices. (Aida, 2020).

According to Agnew and Kallerman (2020), video is defined as a digital medium that shows the arrangement or sequence images and gives illusions, images, and fantasies to moving images. Meanwhile, according to Purwanti (2020), video is a medium for conveying factual or fictitious messages which are informative, educative, and instructional. An expert said that video is a recording of images and sound on a video tape cassette onto a magnetic tape which can provide a real picture, and can manipulate time and place (Apriyansyah et al.,2020).

The emphasis in learning using video media is on learning values obtained through concrete experiences. Video material will only be meaningful if it is used in a teaching process. Video equipment does not have to be classified as a learning experience obtained from sensing, namely the senses of sight and hearing, but as a technological tool that can enrich and provide concrete experiences to students.

The use of mathematics learning media in the form of video allows it to be used in a variety of places, both at school and at home, and the most important thing is that it fulfills the value or function of learning media in general and makes it easier for students to understand a mathematical concept so that it can become an enjoyable lesson. The learning video could show how to solve problems that can attract the attention and interest of students, which will be useful in solving problems.

3. METHODS

The method is an effort that can be carried out by researchers in disclosing data and seeking the truth of the problem under study. The research approach taken is in the form of research and development using Research and Development. The selection of this type of research in the form of development is based on the objectives to be achieved by this research, namely to produce products in the form of learning media. This research and development are more focused on the product produced. The resulting product can be a new product or a product that is being developed again. The result of this research and development is a learning media product animation video material for prime numbers in Mathematics learning at SDIT Nurul Fikri Aceh elementary school through research and development (R&D) adapted from the development stage by Borg and Gall as cited in Sugiyono (2016).

This study used descriptive qualitative research. The subjects of this study were 4th-grade students at SDIT Nurul Fikri Aceh, totaling 21 students. The teaching and learning process conducted using YouTube video media by referring to the Borg and Gall model (Sugiyono, 2016) which explains 6 implementation steps, based on validation and product trials, researchers have developed valid and effective products to achieve learning objectives as supporting media, so they are simplified into 6 steps as follows: 1) potential problems, 2) data collection, 3) product design, 4) design improvements, 5) design revisions, and 6) product trials. This design was chosen because it is by following the objectives to be achieved, namely to find out the development of learning media based on video animation on prime numbers in class IV SD-IT Nurul Fikri which is valid and effective to achieve learning objectives that improve students' cognitive abilities.

4. RESULTS & DISCUSSION

This mathematics learning video program on prime number material at SD-IT Nurul Fikri Aceh was made in the form of YouTube which was divided into several sections starting from the intro or title display and the main menu which contains a profile menu, materials, and videos. There were also 4 buttons of navigation including sound on/off button, exit button, back button to material, and back button to the main menu.

This image is an implementation of video-based learning using the YouTube application which is effective for learning mathematics on prime numbers at SD-IT Nurul Fikri so that it can improve students' cognitive abilities.



Figure 1. Learning introduction

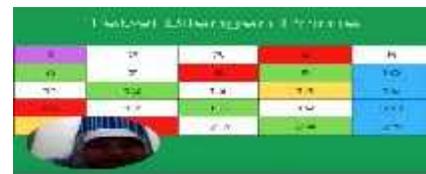


Figure 2. Determining the prime numbers

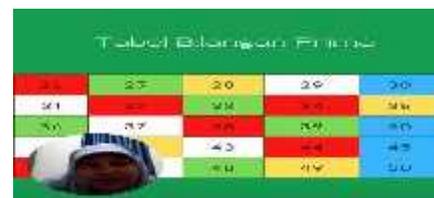


Figure 3. Determining the prime numbers cont.



Figure 4. Prime numbers between 1-100



Figure 5. Summary of step to determine prime numbers between 1-100



Figure 6, 7 The Implementation of Video-based Learning

Figure 1-7 shows the process of learning activities using Youtube application in which the researcher created materials related to the concept of prime number. After the students watched the learning videos, the quiz was given to them. The results showed that the highest score was 100, and the lowest was 60 with 90.5% completeness.

5. CONCLUSION

The purpose of this study was to describe the application of video-based learning in prime numbers materials to improve students' cognitive abilities. It was found that the results of learning mathematics using video media on prime numbers materials can improve students' cognition. This is indicated by the percentage of completeness in obtaining a result of 90.5% which indicates that the cognitive ability of students in learning mathematics is very high. Based on the results of the study, it was shown that the use of mathematics learning video media as a medium can support learning effectiveness which includes complete learning outcomes, good student activity, and positive student responses as well as improve students' cognitive abilities.

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