ELSE (Elementary School Education Journal)

NEEDS ANALYSIS OF INTERACTIVE VIDEO MEDIA BASED ON PROBLEM-BASED LEARNING IN MATHEMATICS CONTENT IN GRADE 4

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Abstract
This study aims to analyze the needs of interactive video media based on problem-based learning in Mathematics content in grade 4 of Roudlatul Jannah Islamic Elementary School. This research method is descriptive qualitative through observation techniques and interviews with 2 4th grade homeroom teachers. The results showed that teachers need interactive video media that can improve students' critical thinking skills. This is due to the lack of technology-based learning resources in the school environment. It is expected that interactive video media can be an interesting and effective teaching alternative to improve critical thinking skills in math lessons. Therefore, the development of interactive video learning media needs to be considered in preparing mathematics lesson plans in grade 4 of Roudlatul Jannah Islamic Elementary School.

Keywords: Interactive Video, Problem Based Learning, Math

OPEN ACCESS
e-ISSN 2597-4122 (Online)
p-ISSN 2581-1800 (Print)

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Received: *21-05-2024*
Accepted: *13-08-2024*
Published: *14-08-2024*

DOI
http://dx.doi.org/10.30651/else.v8i2.22613

INTRODUCTION

One of the most important components in an education unit is the curriculum. The curriculum is the starting point to the end of the student learning experience and is the heart of every school that must be revised innovatively, dynamically and periodically in accordance with the times. Currently, the times in Indonesia are developing very rapidly, especially in the field of technology. The rapid pace of technology has a very positive effect on students and the surrounding community. With the help of technology, everything we access will be easy and fast. Therefore, the current curriculum must be linked to the use of technology in the learning process in elementary schools.

Currently, elementary school education uses the independent curriculum. The independent curriculum is a curriculum that creates a happy learning atmosphere. The purpose of the independent curriculum is so that teachers, students and parents can have an independent learning atmosphere. In the implementation of the independent curriculum, learning must be student-centered and the teacher is only a facilitator in learning. (Fauzi, 2022).

Based on the needs analysis conducted by researchers on grade IV students of Roudlatul Jannah Islamic Elementary School, data obtained that the school already has IT facilities such as LCD projectors and laptops. However, it has not been optimally utilized and used in learning. In class learning is still centered on the teacher. Teachers only use the lecture method when delivering material. Meanwhile, students only listen, take notes, and then do questions from the teacher. In addition, teachers also still use the educator's guidebook in delivering learning materials, thus making math learning less varied, interactive and making students feel bored and lack enthusiasm.

In the current era, the use of interactive learning media can foster enthusiasm for learning and critical thinking skills in learning mathematics. Interactive video here is one of the media that can foster students' critical thinking skills. In its learning practice, interactive video invites users to actively participate in every lesson. This is because interactive videos combine sound, motion, text, images, and a reciprocal relationship between students and the media itself (Biassari & Putri, 2021). In addition, the interactive video provides materials that are easy for students to understand and presents questions and steps on how to work on them to strengthen mastery of concepts about learning mathematics.

There are many benefits in using learning media. The media can clarify the presentation of messages as well as information so as to improve the learning process and results. The learning process becomes clearer and more interesting (Fachrurrazi, 2010), interactive, effective and efficient. Media also fosters student learning motivation (Krissantono, 2013), improves the quality of learning, overcomes time and space limitations, makes the role of students more positive and productive, makes abstract material concrete. Media can provide a common experience for students about events that occur in the environment around them (Wulandari et al., 2023).

Nowadays, the teacher is no longer a source of learning, but acts as a learning designer. In designing learning, a teacher is required to be able to design learning by using various learning models and types of digital media to make learning activities more effective and efficient. Therefore, before learning begins, teachers must conceptualize appropriate teaching tools (Larlen, 2013) along with relevant and suitable media to achieve learning objectives. Of course, the media used must be

interactive, fun and motivating. With interactive learning media, interaction between students is no longer monotonous. The atmosphere is more fun, and students are motivated to learn. Learning media needs analysis is the main step to determine the development of interactive video learning media based on problem-based learning models. This research aims to map the needs of educators in the use of Mathematics learning media. This research contributes to recommending to all educators to map the needs of using interactive video learning media in learning Mathematics at Roudlatul Jannah Islamic Elementary School.

RESEARCH METHODS

This research method uses descriptive qualitative research. The research subjects were 2 grade 4 teachers, namely Mrs. An, the homeroom teacher of grade 4A, aged 32 years and Mrs. At, the homeroom teacher of grade 4B, aged 24 years at Roudlatul Jannah Islamic Elementary School. This research used random sampling for quantitative data. While qualitative data is in the form of interviews. Researchers also added a table of interview sheet grids.

Table 1. Interview Sheet Grid

No	Indicator		Question Item
1	Math learning	a.	What are the conditions for learning math in grade 4?
2	Learning model	a.	What learning model do teachers usually apply to math learning?
3	Learning media	a.	What media supports math learning?
		b.	Is there any media used in flat building material? If so, what
			media is appropriate to use in flat building material?
4	Mathematics learning materials	a.	Are there problems in learning math?
		b.	What material in math learning is difficult for students to understand?
6	Flat material	a.	What problems have you encountered while teaching flat material in grade 4?
		b.	How do you solve these problems?

Furthermore, the research data is also supported by the following questions:

What is the condition of mathematics learning in class IV of Roudlatul Jannah Islamic Elementary School? What types of learning media are often used in learning Mathematics? In 21st century learning, is it necessary to use interactive videos in learning? What material will be presented in the use of interactive videos later?

1. Of course, before conducting research there are several preparations made by researchers such as: Researchers made observations for 2 weeks first related to Mathematics learning conducted by teachers in the classroom.
2. Researchers prepared instruments in the form of question sheets for interviews needed in the study. Furthermore, researchers conducted interviews with 2 homeroom teachers of grade 4 SD Islam Roudlatul Jannah related to Mathematics

learning activities in class IV on Wednesday, March 13, 2024 in the teacher's room.

3. After the data was obtained, the researcher analyzed the interview results using narrative analysis techniques. In this technique, the researcher focused on understanding the experience of the homeroom teacher of grade 4 of SD Islam Roudlatul Jannah in using learning media.

RESULTS AND DISCUSSION

Based on the answer to the question "What is the condition of mathematics learning in class IV of Roudlatul Jannah Islamic Elementary School?". According to An, the homeroom teacher of class 4A, the condition of learning mathematics in class IV, especially in the material of flat shapes, many students look confused and difficult. They have difficulty in understanding the characteristics of flat shapes such as squares, rectangles and triangles. besides that, they also have difficulty in understanding the formulas in calculating the area and perimeter of these shapes. According to Mrs. At, the 4B homeroom teacher, the condition of mathematics learning in the classroom is very boring. Students feel bored if in learning they only use the LKS book, then read and do the questions on the LKS too. This seems monotonous and makes students less enthusiastic. In addition, they also have difficulty in understanding formulas if they are only told to read and listen to the teacher when explaining the material. In my opinion, if learning, especially flat shapes, is packaged in interactive media, it will be able to help and facilitate students in understanding the material and make students enthusiastic about learning.

From the explanation above, it can be concluded that learning math in class 4A and 4B seems monotonous with the lecture method that teachers usually do. This makes students feel bored and lack enthusiasm. In addition, they also find it difficult to understand the formulas of flat shapes and calculate their area and perimeter. Therefore, according to Mrs. At, if learning, especially flat shapes, is packaged in interactive media, it will be able to help and facilitate students in understanding the material and make students enthusiastic about learning.

Use of Interactive Video

Based on the responses to the question "In 21st century learning, is it necessary to use interactive videos in learning?". ". According to Mrs. An, the teacher of class 4A, "I think it is very necessary, because interactive videos are very useful in learning. Because it is now a digital age, there must be many more advanced media to increase students' knowledge and critical thinking skills, of course, such as interactive videos. Of course, in learning, students are also more enthusiastic, making it easier for students to understand the material and learning becomes fun.". According to Mrs. At, the homeroom teacher of 4B, "I think it is very necessary. Because now we have entered the digital age. Of course, there are many digital learning media that are sophisticated and make it easier for students to learn such as interactive videos. By using interactive videos, students will be active and enthusiastic in learning. This is because the interactive video will be collaborated with interesting images, text, sound and colors so that students are happy. In addition, there are exposure to material related to flat shapes that makes it easier for students to understand.

The results of the analysis of interviews conducted with Mrs. An and Mrs. At show that

they have never used interactive learning media during their time as grade 4 teachers. This is explained by the statement that when learning still uses conventional media, such as utilizing media in the school environment, pictures, concrete media (notebooks, blackboards, coins and objects around the classroom). This is not effective because students need concrete, interesting, effective, and efficient media such as interactive videos, so that students are enthusiastic in participating in learning and can improve students' critical thinking skills.

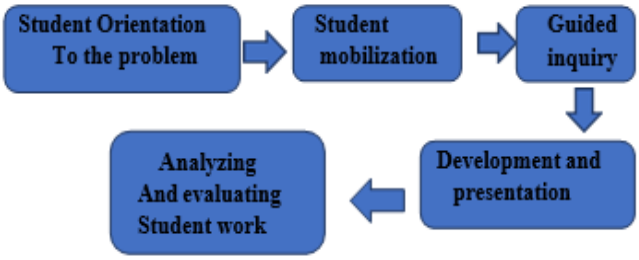
Overall, this research reveals that teachers in learning need interactive media that can improve students' critical thinking skills, one of which is interactive video. Interactive video is a learning media in which it combines sound, motion, text, images, and a reciprocal relationship between students and the media itself (Biassari & Putri, 2021). In interactive videos, there are materials that are easily understood by students and present questions and steps to work on to strengthen mastery of concepts about learning mathematics. Interactive videos will make an effective infrastructure for teachers to present material to students directly in learning. The characteristics of interactive videos (Turibius Rahmat, 2015) include: (1) combines audio, text, image and visual elements, (2) is interactive to accommodate responses from users, (3) has an independent nature which makes it easy for users to be used in learning at any time without guidance from others.

The advantages of interactive videos according to Aqib (Biassari & Putri, 2021) include: (1) learning becomes clearer and more interesting, (2) the teaching and learning process in the classroom is more interactive, (3) time and energy efficiency, (4) improving the quality of learning outcomes, (5) learning can be done anywhere and anytime without a mentor (6) fostering a positive attitude towards learning processes and materials, (7) increasing the role of the teacher in a more positive and productive direction. In addition, other advantages of interactive videos (Safitri et al., 2021) are that they make learning easy for students to learn, one of the best media to explain something, more realistic and can be repeated at any time and as needed and give a deep impression.

Problem-Based Learning Model

Researchers also suggested that based on the needs in learning, of course, it really needs interactive video media. The interactive video that will be used is based on the problem-based learning model. The researcher's aim is to use interactive video based on the problem-based learning model to improve students' critical thinking skills (Ratnathatmaja & Sujana, 2022) in learning. The problem-based learning model is a learning model whose implementation is student-centered (Wedayanti & Wiarta, 2022). The implementation of the problem-based learning model begins by introducing students to authentic or real problems and involving students to identify problems, understand them and solve problems so that in the end students can gain new knowledge and skills needed to solve these problems. The steps in learning with the problem-based learning model are (Astuti et al., 2020): (1) student orientation to the problem, (2) student mobilization, (3) guided inquiry, (4) development and presentation, (5) analyzing and evaluating student work. Mathematics learning is learning that contains facts (Stit & Nusantara, 2020) related to the material to be conveyed. The steps in learning with the

problem-based learning model are (Astuti et al., 2020):



The material to be discussed is related to flat shapes such as explanations related to material about flat shapes, material about the properties of flat shapes, material about the area and perimeter of flat shapes, the process of solving problems related to flat shapes in the form of story problems. In order to produce maximum learning objectives, of course, the materials are packaged using interactive video media based on problem-based learning so that the material presented becomes more effective, efficient, attracts learning interest, is easy for students to understand, increases student activeness and the ability to think critically (Nurfadhillah et al., 2021). So that it will have a positive impact on student understanding and student learning outcomes can increase (Vivianingsih et al., 2023).

The interactive video media is highly desired by grade 4 teachers to support the delivery of math lessons on flat shapes. This is because interactive videos are specifically designed to be effective and efficient media. The interactive video contains material that is organized in a practical manner on target, presented in the form of images and audio equipped with a clear and easy-to-understand speaker's voice, making it easier for students to play anytime to learn (Widiya et al., 2021). The use of appropriate interactive video media provides students with new experiences in learning and students get a real and useful picture (Isnaeni & Hildayah, 2020). Therefore, it is hoped that the interactive video learning media will be able to improve students' critical thinking skills on grade 4 Mathematics learning materials that are difficult to understand and can also make it easier for teachers to convey learning materials concretely and to achieve the desired learning objectives.

CONCLUSIONS

Based on the results of the research that has been conducted, it can be concluded that interactive video learning media based on the problem-based learning model is needed to support the success of learning and learning in Grade 4 of Roudlatul Jannah Islamic Elementary School, especially in learning Mathematics. In addition, interactive video media based on problem-based learning models can be an effective means in improving students' critical thinking skills in learning Mathematics, both concepts and basic principles, and making it easier for students to visualize material that is difficult to understand. Interactive video learning media based on problem-based learning models can also enrich students' learning experiences, so that students can be more motivated and involved in learning. However, to optimize the use of media in learning mathematics, it is necessary to pay attention to several things, for example, the selection of appropriate material, attractive and interactive design, and presentation that is clear and easy for students to understand. In addition, it is necessary to pay attention to technical aspects such as video quality, internet speed, and the availability of adequate devices at school. In order to maximize the benefits of interactive video media based on the problem-

based learning model in learning mathematics at Roudlatul Jannah Islamic Elementary School, it is necessary to evaluate and adjust regularly, so that the learning media can continue to be adapted to technological developments and student needs.

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