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ORIGINAL PAPER

Development of Interactive Video Learning Media for Seventh-Grade Middle School Students

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Abstract
Mathematics is an important field of knowledge, yet in reality, math lessons are less popular, feared, and boring for students. The use of teaching media in the math learning process can assist teachers in improving students' learning outcomes. Therefore, a teacher must be able to choose or create appropriate teaching media for the students. From the problems presented, there is a need to develop visualization media designed as interactive video learning media.

Keywords:
Learning Media
Learning Videos
Interactive Mathematics Videos

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INTRODUCTION

Quality education is able to develop the potential and knowledge possessed by students (Rasyid, 2016). Education is one of the important aspects of national development. In a country, the quality of natural resources can be seen from its education. With education, humans can understand and comprehend the potential they have so that they can hone their potential.

In Indonesia, educational issues still attract much attention, especially in mathematics learning. Mathematics is an important subject to be taught to all students, starting from elementary school, middle school, and higher education, that can equip students with the ability to think logically, systematically, analytically, critically, and creatively, as well as the ability to work together. Mathematics is one branch of knowledge that plays a crucial role in the development of science and technology, both as a tool to support the applications in other fields of science and in the development of mathematics itself (Haryadi, 2021). Mathematics is an important field of knowledge; however, in reality, the subject of mathematics is less favored, feared, and considered boring by students. Students often feel bored in the mathematics learning process because they hold a negative view towards mathematics. Due to this negative perspective, students develop a subconscious mindset that records what they think. These negative feelings or thoughts include fear, anxiety, and negativity, which can even result in students losing self-confidence due to the material being too difficult. Up to now, mathematics is still considered a difficult subject for students. Mathematics is so difficult that it even becomes a phobia caused by a learning pattern that emphasizes teacher lectures, solving problems, memorization, and speed in calculating, which leads to students having a limited perspective on knowledge and becoming passive in learning.

In principle, education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have self-control, personality, intelligence, and the process skills necessary for life (Rohani, 2018). The learning process is an effort made deliberately by the teacher to convey knowledge, organize, and create an environmental system with various methods so that students can engage in learning activities effectively and efficiently to achieve optimal results. In delivering the material, teachers face two main challenges, namely classroom management, where teachers must create a conducive atmosphere in the learning process so that learning objectives can be achieved, and by using appropriate teaching methods, it is hoped that teachers can conduct learning activities in a controlled and directed manner. One of the main aspects that supports the learning process is the selection of teaching media.

The use of learning media in the learning process can stimulate the desire, interest, and motivation in the learning process (Ardhiyah, 2020). Learning media, as one of the components that must be created in the learning strategy, plays an important role in improving the quality of learning, including mathematics learning. Learning media is a tool or means of delivering learning information to students. The presence of learning media in the teaching and learning process can help teachers enhance the learning outcomes of students. Learning media that continually changes along with the advancement of technology demands teachers to keep up with technological equality in other parts of the world to attract students' attention during the learning process, one of which is video-based media. Video can present information, illustrate a process, teach skills, and be replayed (Fauzi, 2019).

One example is the use of interactive video learning media for the learning process. Interactive video learning media is the delivery of material in the form of video, audio, graphics, and text. Interactive learning videos have advantages because of the two elements, namely audio and visual, so that in the learning process, students gain more learning experiences with audio-visual compared to just audio or just visual (Firdaus, 2021). Interactive videos not only involve seeing and hearing but also create a more lively learning atmosphere, and communication between teachers and students can be established well. The use of interactive videos is very important for supporting learning because the use of interactive videos can increase students' interest in learning. With the presence of these interactive videos, it is hoped that learners will experience a new and enjoyable atmosphere in the learning process. Facts state that delivering information with interactive videos can enhance memory retention in learning, as materials in audio-visual form are easier to grasp. Therefore, to address this issue, it is necessary to develop interactive video-based learning.

The use of theoretical learning media will certainly differ from the media used in practical learning. Therefore, a teacher must be able to choose or create appropriate learning media for students. From the problems presented, there is a need for the development of visualization media designed as interactive video learning media. However, the development of interactive video media is still relatively new. Although there are many learning videos available on various websites or platforms like YouTube, interactive videos are still hard to find. Learning, especially mathematics lessons based on interactive videos, is very suitable to help students better understand the material.

The development of learning media on the subject of Algebra and Integers is not limited to interactive videos. There are many other types of learning media, such as Android-based applications, PowerPoint presentations, digital books, and many others. However, the use of interactive video learning media in Algebra is still rarely found. This may be a reason why mathematics learning in the topic of Algebra and Integers is not maximized. Many topics in mathematical logic need to be delivered interactively and involve active participation from learners so that learning is more ingrained in them. Therefore, it is necessary to develop interactive video learning media on the subject through classroom learning and YouTube platforms.

By learning using interactive videos, it is hoped that it will help teachers deliver the material. Learning also becomes more enjoyable because of the initial visualization compared to just reading books and listening to the teacher's lectures, as well as the interaction of students with the learning material. With interactive video learning media, students can directly observe the process of

something happening, think critically, and conclude. Based on the description, this research is conducted to develop learning media for students in mathematics education. Therefore, this research is entitled 'Development of Interactive Video Learning Media for Seventh Grade Junior High School Students'.

METHOD

The research aims to develop and evaluate the effectiveness of using interactive video learning media in mathematics learning conducted at At-Taufiq Junior High School and Darul Ma'arif Junior High School. The research procedure follows the ADDIE development model, which includes the analysis phase, design phase, development phase, implementation phase, and evaluation phase.

The description is as follows: 1) Analysis Stage. The analysis stage is a phase of collecting information that can be used as material to create a product. In this case, the product produced is an interactive mathematics video. This information gathering includes needs analysis, as well as analysis of hardware and software required to create the product. 2) Design Stage. The design stage is carried out to facilitate researchers in designing interactive mathematics videos for the seventh grade. Data collection is needed to create interactive mathematics videos. 3) Development Stage. The development of learning modules is the stage of realizing what has been created in the design stage to become a product. The final result of this stage is a product that will be tested. 4) Implementation Stage. The implementation stage is a trial phase of assessment regarding the quality of the developed media by experts (mathematics education lecturers) and seventh-grade mathematics teachers at At-Taufiq Junior High School and Darul Maarif Junior High School. 5) Evaluation Stage. At this stage, any comments and suggestions from media experts and content experts can be considered for product evaluation, so that the product is improved and produces interactive mathematics videos that are suitable for use at the junior high school level.

RESULTS & DISCUSSION

Results

The development model used in this research is ADDIE, with stages of analysis, design, development, implementation, and evaluation. Based on the research and development conducted, the research results are as follows:

1. Analysis Stage

The analysis stage is conducted to determine the purpose of developing this learning media and for whom this learning media is intended. The researchers conducted interviews with mathematics teachers at SMP At-Taufiq and SMP Darul Ma'arif. This activity is carried out to identify the needs required to address the issues found during the learning process and to gather preliminary information in order to conduct development that includes student characteristics as well as the media used by the teachers.

Based on interviews with teachers from SMP At-Taufiq and SMP Darul Ma’arif, it was found that in mathematics learning, most students experience difficulties in understanding the material. The learning media used in schools require students to work on and solve problems individually. Additionally, the content of the material presented makes some students feel confused and less fond of mathematics lessons. Observing the mathematics problems occurring in both schools, there are nearly the same reasons for developing interactive mathematics videos for the students' learning process.

These interactive mathematics videos can facilitate students in learning mathematics. Moreover, they can make students more active in studying mathematics.

2. Design Stage

Materials that can be collected based on the needs analysis that has been conducted include: a. For filling in the content, the researcher refers to the SMP class VII Mathematics textbook for semester 1, published by Swadaya Murni. To create interactive mathematics videos using the Canva application. The creation of the design draft provides a clearer picture in terms of appearance.

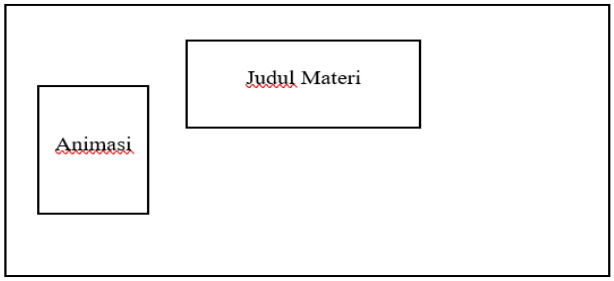

Figure 1. Initial Title Design

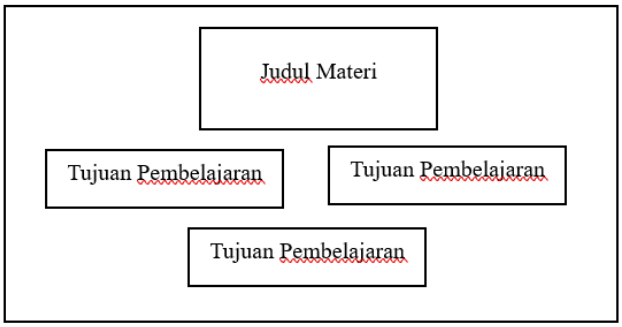

Figure 2. Design of Instructional Objectives

3. Development Stage

At this stage, the activity conducted is the production of interactive mathematics videos. The process of creating these interactive mathematics videos uses assistance materials in the form of software (Canva). This can be seen as follows:

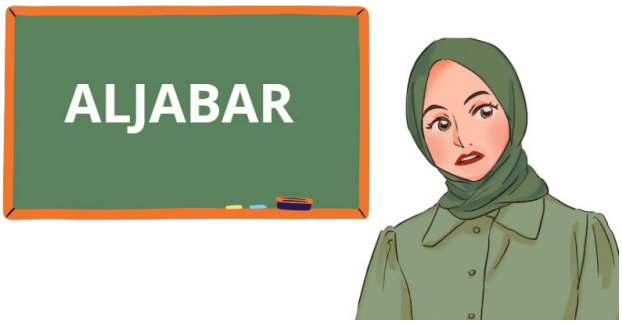

Figure 3. Initial Display

Figure 4. *Display of Instructional Material*

4. Implementation Stage

Implementation is carried out in the classroom, accompanied by a mathematics teacher. Each class guardian also assists the researcher in reminding the students to watch the video and fill out the suggestions and comments provided in the form of a Google form to express their opinions.

5. Evaluation Stage

In this study, the quality of the media is assessed by several experts, namely those who are competent and understand the educational videos that have been prepared. The results of the expert and teacher assessments indicate that the interactive mathematics educational video media has criteria with percentage scores.

Table 1. Assessment Results

No	Validator	Score	Category
1.	Media 1	82,00%	Good
2.	Materi 1	96,25%	Good
3.	Materi 2	88,75%	Good
4.	Materi 3	92,50%	Good
Total		**355,50**	
Average		**88,75%**	
Category		**Good**	

Discussion

Mathematics education plays an important role in life; in practice, some students still consider mathematics a difficult subject (Sholihah, 2017). The low interest of students in learning mathematics has become one of the problems that results in poor learning outcomes (Gusti, 2018). Therefore, it is necessary to have engaging mathematics learning media that can enhance students' interest and learning outcomes in mathematics education.

The selection of learning media is one of the key factors for the success of the learning process in the classroom. Learning media are tools used by educators to guide students in the learning process in the classroom. Learning media should also be tailored to the material taught by the educator (Abdullah, 2017). Learning media can also be adjusted to the characteristics of the learners and the learners' abilities in using that media (Ahmadi, 2017). The learning process is inseparable from media, methods, and learning outcomes. In this era of development, a teacher must be able to foster an

engaging, creative, innovative, and enjoyable learning environment. Teachers can also connect technology or things around them so that they can be used in the learning process (Zhoga, Fiantika & Jatmiko, 2021). Learning must always keep pace with advances in science and technology so that the classroom environment reflects the demands of the times and the personality of the students (Wisada, 2019). The use of learning media in the digital era is required to improve teaching standards because it can encourage more efficient learning. (Winarni, 2021). Utilizing videos as a source and teaching tool is one technique to create the process of learning mathematics. (Batubara & Ariani, 2016). Video media is a tool used by educators to stimulate the feelings, thoughts, and desires of students by presenting ideas, concepts, messages, and information in an audiovisual format (Wisada, 2019).

The development of this learning media consists of interactive mathematics videos on Algebra and Integers for seventh-grade junior high school students. This learning media was developed in response to the problems in learning mathematics related to Algebra and Integers encountered at two schools, namely SMP At-Taufiq and SMP Darul Ma'arif. This development successfully produced interactive mathematics videos that have been validated by experts with good ratings and are suitable for use. The current learning method still being used is a simple one, which makes students bored; therefore, using video as a learning medium can be an alternative to these problems (Purwanti, 2015). In improving the educational standards, schools can use the development of video learning media as a teaching medium (Marga Retta & Fitriasari, 2022). This learning media is packaged in the form of interactive mathematics videos, which include highly educational elements and can be used in an engaging and enjoyable mathematics learning process. Learning with this media can also enhance students' understanding of the material presented (Gusti, 2018). Students can learn mathematics using video learning to increase motivation and engage in meaningful learning activities (Dewi, 2022). The use of video learning media can stimulate students' motivation to learn because of their curiosity about the videos presented, thus improving students' understanding of the given material (Kirana, 2016).

This interactive video learning media for mathematics has several advantages, including being flexible because it is a learning product that can be used anytime and anywhere. This video learning media can be done anywhere because it can be done at home without having to be in class (Ameli, 2021). This learning is effectively conducted online or remotely, as students do not need to come to class; it can be done at home using electronic devices (Malasari, 2021). Effective learning is a type of learning that allows students to learn easily, enjoyably, and achieve the established learning goals (Anwar, 2019). The materials and questions in this media are in accordance with the basic competencies that must be achieved by the students, making the material that needs to be remembered easier due to the enjoyable learning experience. Difficult material or material that requires practical work will be easily understood by learners when presented with learning video media (Busyaeri, 2016). Material using video media will be easier for humans to understand because its display is in the form of light with a focal point that can influence human emotions and thoughts (Yudianto, 2017). Media with video is clearly more conducive to remembering and understanding lessons because it does not rely on just one type of sense (Purwanti, 2015). The ease of video presentation that can be repeated during the learning process makes it easier for students to understand the content of the video; in addition, presenting well-organized material also helps students understand the material, especially regarding concepts (Sudiarta & Sandra, 2016). Although learning with videos is relatively simple and easy, careful and thorough planning is still required to achieve optimal results (Nurfadhillah, 2021).

The result of the development of this interactive learning video media for mathematics contains material on Algebra and Integers. This learning video includes discussions of the material, example problems, problem discussions, and exercises that can help students remember the material and understand the provided questions. The video also features simple yet interesting symbols and images that make it easier for students to understand the material (Moto, 2019). The video should be made as engaging as possible, starting with an introduction to the material to attract students' interest, then presenting the material in an organized manner and including a question within the video to encourage

students to share their ideas actively (Syafi'i, 2022). This interactive video learning media in mathematics is expected to enhance students' motivation, thus helping them in learning mathematics, aiding in understanding what is conveyed, and changing the mindset that learning is not only focused on school textbooks. It can be said that video learning can increase students' motivation and interest in learning because it provides various interesting displays that prevent students from getting bored while studying (Hidayah, 2021).

CONCLUSION

The research development involves creating interactive videos for mathematics learning. Based on the development of interactive media for mathematics learning for seventh-grade students at SMP At-Taufiq and SMP Darul Ma'arif, it has been successfully implemented, and it can be concluded that there are two videos with a total duration of approximately 20 minutes. Based on the assessment from media experts, the percentage is 82.00%. The material expert assessment is 96.25%. The material expert's assessment is 88.75%. The material expert's assessment is 92.50%. Furthermore, the development of interactive videos for mathematics learning is declared feasible based on practical testing with teachers in the classroom during mathematics lessons.

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