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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 often perceived as less popular, feared, and boring for students. The use of teaching media in the math learning process can help teachers improve 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 interactive video learning media designed for visualization purposes.

Keywords:
Learning Media
Learning Videos
Interactive Mathematics Videos

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INTRODUCTION

Quality education enables the development of 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 its natural resources can be reflected in the quality of its education. Through education, humans can understand and comprehend their potential, enabling them to develop and hone it.

In Indonesia, educational issues continue to attract considerable attention, particularly in mathematics education. Mathematics is an important subject to be taught to all students, from elementary school through middle school and higher education, that can equip them with the ability to think logically, systematically, analytically, critically, and creatively, as well as the ability to work collaboratively. Mathematics is one branch of knowledge that plays a crucial role in the development of science and technology, both as a tool to support 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 of mathematics. Due to this negative perspective, students develop a subconscious mindset that shapes their thoughts. 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 challenging that it can even become a phobia, stemming from a learning pattern that emphasizes teacher lectures, problem-solving, memorization, and speed in calculation, which leads to students having a limited

perspective on knowledge and becoming passive in their learning.

In principle, education is a conscious and planned effort to create a learning atmosphere and learning process that enables students to actively develop their potential, including self-control, personality, intelligence, and the skills necessary for life (Rohani, 2018). The learning process is an effort made deliberately by the teacher to convey knowledge, organize it, and create an environment that utilizes various methods, enabling students to engage in learning activities effectively and efficiently, thereby achieving optimal results. In delivering the material, teachers face two main challenges: classroom management, where they must create a conducive atmosphere for the learning process, and using appropriate teaching methods, so that learning objectives can be achieved 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 a key component of a learning strategy, play a crucial role in enhancing the quality of learning, including mathematics education. 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 students' learning outcomes. Learning media that continually change in response to technological advancements requires teachers to keep pace with technological advancements in other parts of the world, thereby attracting students' attention during the learning process, such as through 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 due to the combination of two elements, namely audio and visual, which enables students to gain more learning experiences through audio-visual content 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, allowing for effective communication between teachers and students. The use of interactive videos is crucial for supporting learning, as it can significantly increase students' interest in the subject matter. With the presence of these interactive videos, it is hoped that learners will experience a new and engaging learning atmosphere. Research indicates that delivering information through interactive videos can enhance memory retention in learning, as materials in audio-visual form are more easily grasped. Therefore, to address this issue, it is necessary to develop interactive video-based learning.

The use of theoretical learning media will likely differ from that used in practical learning. Therefore, a teacher must be able to select or create suitable learning materials for students. From the problems presented, there is a need for the development of interactive video learning media designed as visualization tools. However, the development of interactive video media is still relatively new. Although many learning videos are available on various websites and platforms, such as YouTube, interactive videos remain relatively scarce. Learning, especially mathematics lessons based on interactive videos, is highly suitable for helping 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 require interactive delivery and involve active participation from learners, making the learning more ingrained. Therefore, it is necessary to develop interactive video learning media on the subject through classroom learning and YouTube platforms.

By learning through interactive videos, it is hoped that teachers will be able to deliver the material more effectively. Learning also becomes more enjoyable due to the initial visualization, which is more engaging than simply reading books and listening to the teacher's lectures, as well as the

interaction between students and the learning material. With interactive video learning media, students can directly observe a process, think critically, and draw conclusions. 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 a needs analysis, as well as an analysis of the hardware and software required to create the product. 2) Design Stage. The design stage is conducted to facilitate researchers in creating interactive mathematics videos for seventh-grade students. 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 and transforming it into 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, allowing the product to be improved and produce interactive mathematics videos suitable for use at the junior high school level.

RESULTS & DISCUSSION

Results

The development model used in this research is the ADDIE model, which comprises 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 to identify its intended audience. The researchers conducted interviews with mathematics teachers at SMP At-Taufiq and SMP Darul Ma'arif. This activity is conducted to identify the needs required to address the issues identified during the learning process and to gather preliminary information for developing initiatives that incorporate student characteristics and the media used by teachers.

Based on interviews with teachers from SMP At-Taufiq and SMP Darul Ma’arif, it was found that most students experience difficulties in understanding the mathematics 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 help students learn mathematics. Moreover, they can encourage students to be more active in studying mathematics.

2. Design Stage

Materials that can be collected based on the needs analysis 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 of the appearance.

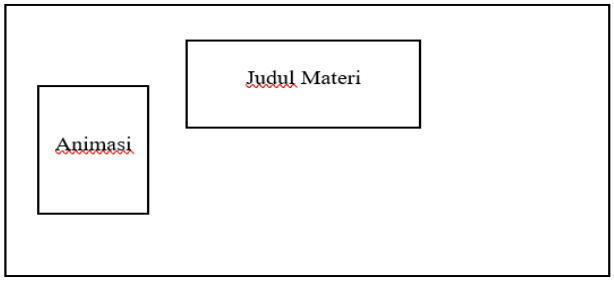

Figure 1. Initial Title Design

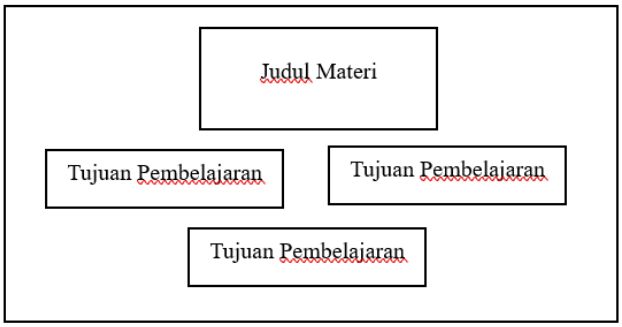

Figure 2. Design of Instructional Objectives

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:

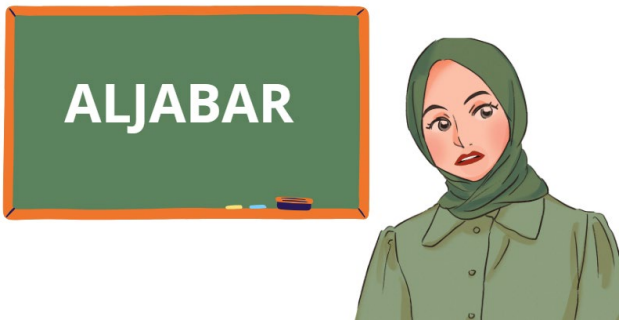

Figure 3. Initial Display

Figure 4. *Display of Instructional Material*

4. Implementation Stage

Implementation is carried out in the classroom under the guidance of a mathematics teacher. Each class guardian also assists the researcher in reminding students to watch the video and complete the suggestions and comments provided in the form of a Google form, allowing them 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 meet specific criteria with corresponding 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 a crucial role in life; however, in practice, some students still consider mathematics a challenging 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 a key factor in 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 tailored to the characteristics of learners and their 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 everyday objects to enhance their use 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 individual personalities of the students (Wisada, 2019). The use of learning media in the digital era is essential to enhance teaching standards, as it facilitates more efficient learning. (Winarni, 2021). Utilizing videos as a source and teaching tool is one effective technique for enhancing the learning process in mathematics. (Batubara & Ariani, 2016). Video media is a tool used by educators to stimulate students' feelings, thoughts, and desires 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 has successfully produced interactive mathematics videos that have been validated by experts and received good ratings, making them 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). To improve educational standards, schools can utilize 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 more effectively by 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, driven by their curiosity about the presented videos, thereby enhancing students' understanding of the material (Kirana, 2016).

This interactive video learning medium for mathematics has several advantages, including flexibility, as it is a learning product that can be used anytime and anywhere. This video learning media can be accessed anywhere, as it can be viewed at home without the need for a classroom setting (Ameli, 2021). This learning is effectively conducted online or remotely, as students do not need to attend class; it can be completed 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 align with the basic competencies that students must achieve, making the material easier to remember 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 presentations, which can be repeated during the learning process, makes it easier for students to understand the content. Additionally, presenting well-organized material also helps students grasp 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 developing this interactive learning video media for mathematics includes 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 capture 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, thereby helping them learn mathematics, aid in understanding the material, and change their mindset to one that is not solely 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 among seventh-grade students at SMP At-Taufiq and SMP Darul Ma'arif, it has been successfully implemented. It can be concluded that two videos, with a total duration of approximately 20 minutes, have been developed. 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.

REFERENCES

Abdullah, R. (2017). Pembelajaran dalam perspektif kreativitas guru dalam pemanfaatan media pembelajaran. *Lantanida Journal*, 4(1), 35–49.

Ahmadi, F., Sutaryono, S., Qitanto, Y., & Ratnaningrum, I. (2017). Pengembangan media edukasi sebagai penguatan pendidikan karakter siswa sekolah dasar. *Jurnal Penelitian Pendidikan*, 34(2), 127-136.

Anwar, M. (2019). Menciptakan pembelajaran efektif melalui hypnoteaching. *Jurnal Penelitian Hukum dan Pendidikan,* 16, (2), 469–480.

Ardhiyah, M. A., & Radia, E. H. (2020). Pengembangan media pada materi matematika untuk meningkatkan hasil belajar. *Jurnal Penelitian dan Pengembangan Pendidikan*, 4(3), 479-485.

Batubara, H. H., & Ariani, D. N. (2016). Pemanfaatan video sebagai media pembelajaran matematika SD/MI. *Muallimuna: Jurnal Madrasah Ibtidaiyah*, 2(1), 47.

Busyaeri, A., Udin, T., & Zaenudin, A. (2016). Pengaruh penggunaana video pembelajaran terhadap peningkatan hasil belajar. *Jurnal Pendidikan Guru MI*, 3(1).

Dewi, P., Wayan Suniasih, N., & Kunci, K. (2022). Media video pembelajaran matematika berbasis etnomatematika pada muatan materi pengenalan bangun datar. *Jurnal Edutech Undiksha*, 10(1), 156–166.

Fauzi, A., & Lu'luilmaknun, U. (2019). Video sebagai media pembelajaran matematika. *Jurnal Program Studi Pendidikan Matematika*.

Firdaus, H., Atikah, C., & Ruhiat, Y. (2021). Pengembangan video pembelajaran terintegrasi YouTube. *Jurnal Pendidikan Teknik Mesin*.

Gusti, E. (2018). Penerapan model pembelajaran kooperatif tipe teams games tournamen (TGT) pada materi pokok sistem persamaan linear dan pertidaksamaan satu variabel untuk meningkatkan hasil belajar. *Jurnal Pendidikan Tambusai,* 2, (1), 131-140.

Haryadi, R., Nuraini, H., & Kansaa, A. (2021). Pengaruh media pembelajaran e- learning terhadap hasil belajar siswa. *Jurnal Pendidikan*, 7(1), 2548–4419.

Hidayah, A., Basri, R. A. Q., & Yusuf, M. (2021). Journal of Educational Technology, Curriculum, Learning, and Communication. *Journal of Educational Technology, Curriculum, Learning, and Communication*, 1(1), 8–12.

Izah, S. J., & Malasari, P. N. (2021). Video pembelajaran dalam pembelajaran matematika. *Jurnal Pendidikan Matematika*, 1(01), 44–58.

Jediut, M., Sennen, E., & Ameli, C. V. (2021). Manfaat media pembelajaran digital dalam meningkatkan motivasi belajar siswa sd selama pandemi covid-19. *Jurnal Literasi Pendidikan Dasar*.

Karo-Karo, I. R., & Rohani, R. (2018). Manfaat media dalam pembelajaran. *Jurnal Pendidikan dan Matematika*, 7(1), 91-96.

Kirana, M. (2016). The use of audiovisual aids to improve listening. *English Education Journal*, 7(2), 233–245.

Marga Retta, A., & Fitriasari, P. (2022). Pengembangan video pembelajaran pada materi barisan dan deret untuk peserta didik kelas X SMK. *Jurnal Penelitian Pendidikan dan Pengajaran Matematika*, 8(1), 63– 72.

Moto, M. M. (2019). Pengaruh penggunaan media pembelajaran dalam dunia pendidikan. *Indonesian Journal of Primary Education*, 3(1), 20–28.

Nurfadhillah, S., Ramadan, F. C. T., Afianti, N. A., Huzaemah, & Erdian, A. E. (2021). Pengembangan media video pada pelajaran. *Pandawa: Jurnal Pendidikan dan Dakwah*, 3(2), 333–343.

Purwanti, B. (2015). Pengembangan media video pembelajaran matematika dengan model ASSURE. *Jurnal Kebijakan dan Pengembangan Pendidikan*. 3, (1), 42- 47.

Rasyid, M. (2016). Pengembangan media pembelajaran berbasis multimedia dalam konsep sistem indera pada siswa kelas XI SMA.

Sholihah, Silfi Zainatu & Ekasatya Aldila Afriansyah. (2017). Analisis kesulitan siswa dalam proses pemecahan masalah geometri berdasarkan tahapan berpikir Van Hiele. *Jurnal Mosharafa,* 6, (2), 287-298.

Sudiarta, I. G. P. & Sadra I. P. 2016. Pengaruh model blendes learning berbantuan video animasi terhadap kemampuan pemecahan masalah dan pemahaman konsep siswa. *Jurnal Pendidikan dan Pengajaran*, (Online), 49 (2): 48-58,

Winarni, S., Kumalasari, A., Marlina, M., & Rohati, R. (2021). Efektivitas video pembelajaran matematika untuk mendukung kemampuan literasi numerasi dan digital siswa. *AKSIOMA: Jurnal Program Studi Pendidikan Matematika*, 10(2), 574.

Wisada, P. D., Sudarma, I. K., & Yuda S. A. I. W. I. (2019). Pengembangan media video pembelajaran berorientasi pendidikan karakter. *Journal of Education Technology*, 3(3), 140.

Yudianto, Arif (2017) Penerapan video sebagai media pembelajaran. In: Seminar Nasional Pendidikan 2017, Sukabumi.

Zahwa, F. A., & Syafi'i, I. (2022). Pemilihan pengembangan media pembelajaran berbasis teknologi informasi. *Equilibrium: Jurnal Penelitian Pendidikan dan Ekonomi*, 19(01), 61–78.

Zhoga, E. F. E., Fiantika F. R., & Jatmiko. (2021). Gamelan sebagai media discovery learning untuk mengetahui kemampuan representasi matematik siswa. *Jurnal Pendidikan Matematika Raflesia,* 6(1).