



The Development of Animation-Based Learning Videos in Comparative Material for Class VII on Junior High School

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DOI: <http://dx.doi.org/10.18592/tarbiyah.v12i2.8544>

Key Words:

animation
audio visual media
comparative material
learning videos

Abstract:

This research is motivated by the need for more learning media development to support students' learning processes. This research aims to determine the validity of animation-based learning videos that will be developed in class VII Junior High School (Sekolah Menengah Pertama/SMP). In the implementation process, this research adopted the (R&D) method called Research and Development in foreign languages, referring to the 4D development model. To support the method used by researchers, a data collection tool was used as a validation questionnaire given to material expert validators, media expert validators, and language expert validators. From the validation results, information was obtained in the form of the feasibility of animation-based learning videos in comparative material for class VII SMP, which were developed in the very valid category, with a percentage of media expert assessment of 90%, material expert assessment of 91.4% and language expert assessment of 86%. Based on the overall data analysis results, the learning video media that will be developed is feasible and can be implemented in the learning process in class VII SMP.

Received : 12 - 01 - 2023

Revised : 12 - 03 - 2023

Accepted : 07 - 08 - 2023

Published : 27 - 12 - 2023

To cite this article: Putri, D.T., & Izzati, N. (2023). The Development of Animation-Based Learning Videos in Comparative Material for Class VII on Junior High School. *Tarbiyah: Jurnal Ilmiah Kependidikan*. 12(2), 81-88.

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Introduction

According to [Rahman \(2022\)](#), education is an effort carried out consciously and on a schedule to create situations and conditions for a learning process that are suitable for students so that students can quickly discover and realize their potential in the areas of spirituality, discipline, character, expertise, noble character and skills needed by himself and society. Based on the explanation above, education is vital in everyday life. Because with education, humans have direction and purpose. Education can be good when its use is not only to prepare students to achieve goals such as a career or position but also to prepare students to solve various kinds of problems in everyday life ([Siagian, 2016](#)).

Education that is closely related to completing daily life is mathematics. Mathematics is an essential part of efforts to improve the quality of education where it is taught in formal education institutions ([Novitasari, 2016](#)). According to [Hardi, et al \(2013\)](#), mathematics is a lesson related to many concepts. The interconnectedness of mathematical concepts from one material to another proves that understanding mathematical concepts is very important. Therefore, students can only understand the material if they understand mathematical concepts. In mathematics lessons, there is a variety of material that students consider pretty tricky. One example of this material is comparison. This is because there is still a need for students' level of understanding of a concept in the mathematics learning process.

Comparative material is material whose application is often found in everyday life ([Sari, 2020](#)). However, this material is challenging for students to understand. The lack of students' understanding of this comparison problem is caused by the low level of students' abilities ([Hardi et al., 2013](#)). Apart from that, the discussion regarding the material regarding comparison still uses textbooks that directly refer to the algorithm of the material. Such an approach is inappropriate because it can make it difficult for students to understand the concept of comparison. Then, there needs to be more development of media or learning methods that can support a learning process, which will cause students' interest to be low, and they will not feel interested in learning.

Efforts to attract students' interest in learning can be made through learning media development. The advantage of learning media is that it can present learning content in images, sound, or video, helping the learning process be more focused and exciting ([Iwan, 2014](#)). Learning videos can attract students' interest in learning. They can also help students understand the material more happily ([Teng, 2022](#)), in line with [Suryansah & Suwarjo \(2016\)](#) , who says that learning videos can help students understand the material more quickly and easily. Better, so that the knowledge gained will last a long time. According to [Martzoukou \(2022\)](#) animated learning videos can attract students to participate actively in learning. Additionally, animation-based learning videos can help students improve learning outcomes ([Ponza et al., 2018](#)).

The learning video developed is a video that contains the concept of students' ability to understand comparative material well, which is then equipped with animation. The comparison material that has been developed contains comparison material for values and values in class VII SMP, then is equipped with examples of contextual questions to increase students' interest in continuing to learn so that they

can gain flexible and applicable knowledge in everyday life. This research aims to clearly illustrate both the theory and the usefulness of developing a valid animation-based learning video about comparison in class VII SMP.

Research Method

The method used to facilitate research into developing animation-based learning videos in comparative material for class VII SMP is R&D or Research and Development in foreign languages, which means research and development. [Sugiyono \(2019\)](#) states that research and development produce a product, design, manufacture, and validity test. In line with [\(Rusinta et al., 2019\)](#) research and Development is a process of developing a new product or improving an existing product in the form of software or hardware that can be accounted for.

This research uses a model of 4D or four main stages: Define, Design, Develop, and Disseminate [\(Thiagarajan, 1974\)](#). This research only reached the development stage, and its validity testing was only done by experts. The data collection method used is a questionnaire, and the research instruments are media, material, and language validation sheets. The purpose of the validation instrument is to make it easier for researchers to determine the validity of learning video media. The instruments used have been validated by experts first. Apart from that, this research also uses two methods of data analysis. The first method, namely qualitative descriptive analysis, is valid for processing data sourced from suggestions and comments from experts, and the second method is descriptive statistical analysis, where this method is beneficial for processing data obtained from expert assessment scores in the form of descriptive percentages. On the other hand, researchers also use data analysis or processing in a Likert scale, which helps measure the suitability level of a product being developed. The Likert scale has a formula for data processing, which, according to [\(Sugiyono, 2017\)](#) as follows:

$$(\%) = \frac{\text{score obtained}}{\text{maximal score}} \times 100\%$$

Researchers use an assessment criterion to determine whether a category level is valid or not for the animation-based learning video being developed. The form of assessment criteria used by researchers is shown in Table 1 as follows:

Tabel 1. Likert Scale

Score	Criteria
5	Strongly Agree
4	Agree
3	Neither Agree or Disagree
2	Disagree
1	Strongly Disagree

The media validity criteria are shown in Table 2 as follows:

Table 2. Validity Criteria

Evaluation	Criteria
$80\% < x < 100\%$	Very High
$60\% < x < 80\%$	High
$40\% < x < 60\%$	Enough
$20\% < x < 40\%$	Low
$0\% < x < 20\%$	Very Low

([Riduwan and Akdon, 2013](#))

Finding and Discussion

The research was conducted to produce a product in the form of an animation-based learning video on comparative material. The resulting learning videos can be played offline. This research also refers to the 4D development model, which defines, designs, and develops. The researcher explained each of these stages one by one:

1. *Define*

This stage is where researchers carry out curriculum and material studies and formulate objectives. The study's results or analysis will be obtained by interviewing SMP Negeri 6 Tanjungpinang mathematics teachers. According to the interview results, the curriculum applied in class VII is the Merdeka Curriculum. The learning media used in class is still very conventional, and the teacher also adopts the lecture method. The learning resources used are textbooks. Apart from that, learning media is still limited to using a blackboard. This limitation in the development of learning media causes students' interest in learning to decrease. As a result, students need help understanding the lesson material. When analyzing the material, the obtained material, namely comparisons of value and reverse values, took time for students to understand. It is indicated by students' understanding that it is still difficult to differentiate between value comparisons and value reversals.

Then, the material study aims to determine the suitability of the material with the learning outcomes and objectives in the independent curriculum so that it runs according to procedures. The researcher formulated learning objectives after reviewing the curriculum, students, and materials. Formulating learning objectives aims to ensure that the discussion of the material is appropriate to the problems being experienced.

2. *Design*

The researcher prepares all the components needed to create an animation-based learning video at this stage. The sequence of processes in the design stage is as follows:

a. Media Selection

Media selection is adjusted to the needs and character of students as well as suitability to the learning material.

b. Media Design

At this stage, design is carried out and fulfills the need to create animation-based learning videos on equal and reverse comparison material.

c. Media Creation

At this stage of media creation, animation-based learning videos are created based on the design and concept that has been created.

3. *Development*

This stage is where the researcher creates animation-based learning videos about comparisons according to what was conceptualized and designed in the previous stage and develops media assessment instruments that will be tested in the next stage. The instruments created are validated first before being used for assessment. There are several views of the learning videos developed:



Figure 1. Opening

Figure 1 is a picture of the opening title of the module, which shows material related to the module. This module opener is an integral part of module development, making students interested in learning to use the module. Images and colors are presented to be exciting and arouse students' curiosity.

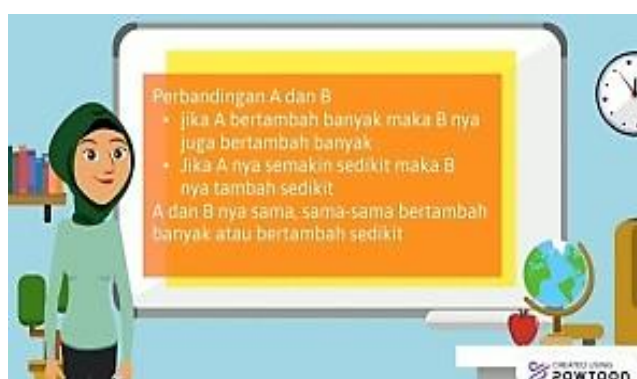


Figure 2. Student Apperception

In Figure 2, the development carried out is student apperception. Apperception in a module is essential for building concepts that students will accept ([Setyadi and Saefuddin, 2019](#)). So that good and exciting apperception will increase students' interest in learning using the module. The form of apperception in the mathematics module can be a story problem and relate to an initial concept that students can understand ([Jazim et al, 2016](#)).



Figure 3. Material Explanation

Figure 3 explains the core material about fractions. After the apperception stage, students are taken to the core material of the module. The material presented is in the form of illustrations to help students have the most accessible picture of learning mathematics. Apart from pictures, reinforcement is also provided through learning videos ([Lestari and Handayani, 2018](#)).

After the animation-based learning video has been developed, the next step is to validate the product by validation experts, namely validation by media experts, material experts, and language experts. Media expert validation is carried out by a media expert validator by filling out a questionnaire consisting of 3 assessment aspects with eight questions. The overall data results obtained a score of 36 with a percentage of 90%. Based on the criteria, animation-based learning videos in comparative material for class VII SMP according to the criteria are very valid and suitable for use in learning. Material expert validation is carried out by a material expert validator by filling out a questionnaire consisting of 2 assessment aspects with seven questions. The overall data results obtained a score of 32 with a percentage of 91.4%.

Based on the criteria, it can be concluded that animation-based learning videos in comparative material for class VII SMP according to the criteria are very valid and suitable for use in learning. Fractional materials are materials found in everyday life. Students who study mathematics using modules will look for a match between the material and applications in everyday life ([Thoibah et al, 2022](#)). The material presented in the module is adapted to everyday life through illustrations and images of students' daily lives so that the modules created can be adapted to student material and make students interested in learning mathematics.

Linguist validation is carried out by a language expert validator by filling out a questionnaire consisting of 2 assessment aspects with 12 questions. The overall data results obtained a score of 43 with a percentage of 86%. Based on the criteria, it can be concluded that animation-based learning videos in comparative material for class VII SMP according to the criteria are very valid and suitable for use in learning. The appropriateness of language can be seen from the language used to attract students' interest in learning ([Fatikhah dan Izati, 2015](#)).

Based on the validation results above, developing animation-based learning videos on comparative material for class VII SMP is valid and can be used without revision. In line with [Bello-Bravo et al., \(2018\)](#) nimated learning videos whose validity has been tested can be used and are effective in helping the process of understanding the material. Using animated learning videos to learn effectively can help students gain knowledge quickly and focus on the learning process ([Ünal et al., 2010](#)). Previous

studies also indicate that animated learning videos could help students improve their understanding and learning outcomes ([Dalacosta et al., 2009](#); [Mou, 2023](#)).

Conclusion

Based on the discussion above, animation-based learning videos in comparative material for class VII SMP are classified as valid and can be used without revision. After testing the validity of animation-based learning video media, it can be implemented in the learning process.

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