

Development of Mathematics Learning Videos for Class VIII Statistics Materials

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ABSTRACT

The research on developing mathematics learning video media for class VIII statistics material aims to: 1) find out the process of developing mathematics learning videos for class VIII statistics material, 2) find out how the results of developing mathematics learning video media in class VIII statistics material. This research is a type of research and development or research and development (R&D) using the ADDIE model, including analysis, design, development, implementation, and evaluation. The research analysis technique uses an assessment score from the validator, namely the validator of the informatics teacher media expert at MTs. Ghozaliayah Jombang and material expert for mathematics education lecturer and mathematics teacher at MTs. Ghozaliayah, as well as student response scores to learning video media in the form of questionnaire results. This research resulted from product validation test. The media expert validation test obtained 78% with the classification being quite valid or suitable for use. The assessment by material experts got a score of 85% with a very valid classification or very feasible to use. . The results of the student response questionnaire got a score of 75% with a practical classification. Based on this classification, it can be concluded that the video media for mathematics learning in class VIII statistics material is suitable for use in learning.

Keywords: Learning Media, Video, Statistics.

INTRODUCTION

Use of learning models in the learning process is one of the efforts to create more meaningful and quality learning (Wardani 2020). To improve the learning process, teachers must use effective learning models to overcome students' problems in learning, one of which is by utilizing technology. Especially in the current era of the COVID-19 pandemic, of course teaching and learning activities are very difficult for both teachers and students. Students are required to study from home, it will greatly affect the quality of student learning, from those who usually study in class with the assistance of a student teacher to study independently at home. In addition to using a varied learning model, students also do not feel bored with a commonly used learning model.

According to Sanaky (2013), learning media are educational facilities or tools that can be used as intermediaries in the learning process to enhance effectiveness and efficiency in achieving learning objectives. Meanwhile, according to Aprilia (2019), the notion of learning media is anything that can be used as an intermediary or messenger from the teacher to students in encouraging a deliberate, purposeful, and controlled teaching and learning process. Learning to use media will make the material presented more concrete and easily accepted by students (Mustika 2015). Learning media will facilitate the teaching and learning process so as to create good communication and reciprocity between teachers and students.

Along with the development of technology, there are various kinds of learning media that can be developed to increase students' creativity in learning, including mathematics (Satiti, 2019). One of the problems faced by the world of education is the problem of the weakness of the learning process. In the learning process in the classroom, it is directed to the child's ability to memorize information. Whereas in learning mathematics requires reasoning and not memorization. Mathematics is often considered a scourge for students, they think that mathematics is the most difficult subject, therefore students become increasingly lazy to learn mathematics. Moreover, in delivering material, teachers still often use the

lecture method which is sourced from textbooks only. According to Khotimah, K., & Verdianingsih, E. (2019), an education if it wants to result in the achievement of an appropriate educational goal, several elements are needed in building the education. These elements include professional teachers, appropriate learning strategies, appropriate materials or curriculum and learning media.

Based on the results of interviews conducted with MTs mathematics teachers. Ghzoliyah in Jombang, when participating in teaching and learning activities students are less enthusiastic in participating in learning in class. Lessons are still teacher-centred and the learning resources used only come from textbooks and worksheets. So we need a learning media to attract students to take part in learning activities in class and the learning process can run well.

Based on the results of previous research conducted by Tri Wahyuni, Khusnul Khotimah, and M. Farid Nasrulloh entitled "*Development of Camtasia-Based Interactive Learning Media and Wondershare Quiz Creator for Class VII Social Arithmetic Materials*". The research results obtained are 1) the material validation test gets an assessment of 3.41 with a valid category, 2) media expert validation gets a score of 3.6 with a valid category, 3) student learning outcomes show an average value of 76.8 with the above qualifications. KKM is categorized as complete. This shows that the camtasia-based interactive learning media and wondershare quiz creator are good and feasible to use in learning mathematics on social arithmetic material for class VII SMPN 4 Jombang.

Based on the background of the problem above, the researcher is motivated to do research on "**Development of Mathematics Learning Videos for Class VIII Statistics Materials**". Statistics is the study of the design of data collection, data presentation, data analysis, data interpretation, and drawing conclusions where there is diversity and uncertainty. Researchers chose statistics as the material presented in the development of learning video media because statistics can be applied in the real world in its application.

METHOD

This study uses research and development methods using the ADDIE model. This research procedure uses the ADDIE development model which consists of five stages which include: 1) analysis, 2) design, 3) development, 4) implementation, and 5) evaluation. . The ADDIE model is often used to describe a systematic approach and the learning model is general and suitable for development research. The subject of this study was tested on class VIII MTs students. Ghozaliyah Jombang with a total of 25 students.

The data collection instruments in this study were in the form of student response questionnaires and tests. The technique used in data collection is to calculate the acquisition of response questionnaires and then calculate the practicality level scale. After the data is collected then an analysis is carried out by calculating the score of each question item in the questionnaire. The percentage of assessment uses the following formula:

$$Score = \frac{\sum \text{score obtained}}{\sum \text{Nilai maks}} \times 100\%$$

Table 1. Qualification Level of Practicality

Percentage	Validity Level
81,0% – 100,0%	Very valid/very practical
61,0% – 80,9%	Valid/practical
41,0% – 60,9%	Quite valid/ prcktical
21,0% – 40,9%	Invalid/impractical

Based on the above criteria, the media is said to be valid and practical when the percentage reaches 40% - 100% with the categories "fairly valid / quite practical" and "very valid / very practical".
Criteria for student responses

$$\text{Score} = \frac{\sum \text{score obtained}}{\sum \text{Nilai maks}} \times 100\%$$

Table 2. Student Response Qualification

Percentage	Validity Level
81,0% – 100,0%	Very valid/very practical
61,0% – 80,9%	Valid/practical
41,0% – 60,9%	Quite valid/ prcktical
21,0% – 40,9%	Invalid/impractical

Based on the above criteria, the media is said to be valid and practical when the percentage reaches 40% - 100% with the categories "fairly valid / quite practical" and "very valid / very practical".

RESULT AND DISCUSSION

The results of the research produced in this development are learning video media on statistical material for class VIII that have been validated by experts, education practitioners and tested directly by class VIII-B students at MTs.Ghozaliyah Jombang with a total of 25 students. The development model used in This research is the ADDIE model which includes: analysis stage, design stage, development stage, implementation stage, and evaluation stage.

Analysis: In the analysis phase, the researcher conducted observations and interviews with mathematics teachers at MTS. ghozaliyah's goal is to obtain data about the problem and use it as a reference for developing learning media. There are several stages in this development analysis, namely the need for learning media, material analysis, analysis of student characteristics, and formulating goals

- **The analysis stage of the need for the development of learning media**

This analysis phase was conducted by interviewing the mathematics teacher, namely Mrs. Yatimatul Khoiroh, S.Pd. in the interview Ibu Khoiroh said that during class learning, the media used when teaching were in the form of textbooks and worksheets as well as during online learning she only gave assignments and materials contained in textbooks or worksheets. Ms. Khoiroh said that during the learning process there were some students who were active and there were also students who paid less attention so that researchers wanted to develop innovative learning media to help students understand the material more interestingly and not be boring.

- **Material Analysis Phase**

The material analysis phase is carried out by selecting relevant materials and collecting material sources used by researchers in developing media, including those from the class VIII module student books. The material used by the researcher is statistics. Statistics is a science that studies how to plan, collect, analyze, and provide conclusions on a data.

- **Stage of Formulating Goals**

The stage of formulating this goal is carried out based on the results of material analysis, and learning objectives are made referring to the basic competencies of the 2013 curriculum for class VIII statistics.

Design: The design phase includes several planning for the development of teaching materials. At this design stage, namely making learning video media which includes: 1) Designing a written storyline, Designing this storyline, aims to facilitate researchers in the initial process of making media. 2) collect supporting components. This component collection stage aims to support materials in making learning videos, which include selecting materials, templates, backgrounds, instrumental music and the Canva application. 3) create learning video media, this learning video media is made online on the Canva application. Inside the Canva application there is a graphic design menu that is presented online. In making this learning video, it is made in a presentation slide menu in which you can choose a

background, template, type of writing, moving images or animations, as well as instrumental music according to the desired needs.

Development: This development aims to produce a product in the form of a mathematics learning video. The data obtained from this development result from the validation of material experts, namely mathematics study program lecturers and practitioners/teachers, and validation of media experts, namely informatics engineering teachers at MTs. Ghozaliyah

Implementation: The data on the results of this implementation were obtained based on product trials on class VIII students at MTs. Ghozaliyah Jombang with the number of students as many as 25. The assessment was carried out by filling out test question sheets and filling out student response questionnaires after watching the learning video. Based on the results of the recapitulation of student response data, it can be stated that the video learning media is practically used in learning.

Evaluation: The data from this evaluation aims to determine whether the learning video media developed in this statistical material is in accordance with the initial objectives or not. The evaluation was obtained from the results of student response questionnaires and post-test questions after students studied statistical material in instructional video media. The results of the post-test practice questions and student response questionnaires showed students' interest in using learning video media.

Result

At this stage, validation is carried out by validators of media experts and material experts as well as student response questionnaires. This validation is used to determine the quality of the product developed by the researcher, as well as to determine the practicality of the mathematics learning video media. The data from the validation results are presented in table 3 as follows:

Table 3 data validation results by media experts and material experts

Number	Validator	Percentage	Description
1.	Media expert	78	Valid/practical
2.	Material expert	85	Very valid/very practical
3.	Student response	75	Valid/practical
Amount		238	
Average		79%	Valid/practical

It can be seen in table 3, that the percentage score of media experts obtained 78 with valid categories, material experts 85 with very valid categories, and the results of student response questionnaires 75 with practical categories, it can be concluded that the results of developing mathematics learning video media on statistics material for class VIII This is valid and practical to use for learning media.

The stage that needs to be done to obtain good product development results and meet the target is that revision is needed. There were several revisions made including adding learning objectives, adding practice questions, and sounding in learning videos.

Discussion

The development of the media developed by this researcher produces learning media in the form of mathematics learning videos. Learning video is a media that is systematically designed by referring to the applicable curriculum and in its development applying learning principles so that the program allows students to examine the subject matter more easily and interestingly. This product produces media in the form of mathematics learning videos whose use can be accessed on social media, namely YouTube. The advantages of this learning video media make it easier for students to learn anywhere and anytime. In the questions given, students fill out practice questions to measure students' understanding of statistical material using instructional video media. The next step is product validation of media experts, material experts, practitioners to validators while the assessment includes the assessment of media experts including on-screen display, presentation, animation, sound and effectiveness. , presentation of the material.

CONCLUSION

The product developed is in the form of video media for learning mathematics for class VIII statistics. This development uses Based on the results of the development that has been carried out by researchers which is a type of research and development (R&D) using the ADDIE model, the final product produced is in the form of learning video media on statistical material for class VIII. The analysis phase was conducted by interviewing the MTs mathematics teacher. Ghozaliyah Jombang, this interview was conducted to determine the need for the development of learning media. The design stage is carried out by collecting materials and compiling learning videos. The development stage is carried out by validating the validators, namely material experts, media experts, and practitioners/teachers. Then the next stage of implementation in this case is direct research or product testing to class VIII students at MTs. Ghozaliyah with the number of students as many as 25. At this stage students were given pre-test and pots-test questions and then gave a student response questionnaire to the learning video media. The last stage is the evaluation stage, which is carried out to find out whether the product developed is valid and practical or not.

The learning video media produced in this development is an audio-visual media packaged in MP4 format which is then published to *YouTube*. The feasibility obtained from the product is the result of validation tests and practicality tests. The assessment obtained from media experts got a score of 78% with a fairly valid classification or suitable for use. The assessment by material experts got a score of 85% with the classification being quite valid or suitable for use. The results of the student response questionnaire got a score of 75% with a practical classification. Based on this classification, it can be concluded that learning video media is feasible and practical to use in learning.

This learning video media has several advantages and disadvantages. These advantages include: 1) learning video media can be used anywhere and anytime, 2) The material presented becomes more interesting and easy to understand 3) The material presented is in accordance with KD, KI 2013 curriculum, 4) The material can be applied in everyday life. Weaknesses in this learning video media are published on *YouTube* so that in its use it must use internet quota.

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