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Development of Online Learning Media Based Video on Class V Science Lessons in MI Al Khoiriyah Depok

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Abstract: Research and Development aimed at producing a video-based online learning media product at MI Al Khoiriyah Tapos. The problems in this study are formulated as follows: (1) How is the process of developing online learning media in science subjects of animal and human organs of motion for class V MI Al Khoiriyah, Depok City. (2) What is the feasibility level of material and learning video media in science subjects of animal and human organs of motion material for class V.(3) How is the effectiveness of the use of media Learning videos in science subjects animal and human organs of motion in improving the learning outcomes of class V students. 1) Preliminary research and data collection, 2) Model design, 3) Validation of expert tests and one-to-one tests, 4) Product revision, 5) Small group test, 6) Product revision, 7) Large group test, 8) Product revision, 9) Final model. The sample in this study was that the students of class V MI Al Khoiriyah consisted of 23 students, with details of 3 students for the small group trial and 23 students for the large group trial. Data analysis techniques use qualitative and quantitative descriptive analysis. Based on the results of data processing obtained: 1) The feasibility test assessment by material experts is assessed based on the relevance of the material contained in the learning media to get a percentage of the value of 89% of the assessment results, including being very feasible to use. 2) The assessment of the feasibility test of learning media is assessed based on the relevance of the media getting a percentage of 84% value and belongs to the category of "feasible". 3) The assessment of the one to one test on students to find out the level of media use gets a percentage of 89% value and belongs to the category of "very feasible". 4) The assessment of a small group trial conducted by 3 students received a percentage of 84% and belonged to the "decent" category. 5) The normality test of video-based online learning media in science lessons gets sig values of 0.103 (Pre Test) and 0.383 (Post Test) then it can be concluded that these values are distributed "Normal". 6) The effectiveness test of video-based online learning media in science lessons gets a score of 18,043, so with these results, video-based online learning media in class V science lessons are effectively used in learning activities.

Keywords*:* Development research, Online learning media, Science learning videos

Introduction

The learning process in schools is an activity in an effort to improve students' knowledge and skills. In addition, schools also function as a medium for interacting with each other. Overall, the school is used as a medium of interaction between students with students, students with teachers, and students with the surrounding environment. The process of interakaksi between students and teachers, which was originally carried out through in-person interaction, is now no longer possible due to the COVID-19 pandemic. Students are required to carry out distance learning from home, of course, with new habits that were never imagined before. With such a policy the quality of education has decreased, ranging from student learning motivation, irregular learning carried out at home to learning outcomes that are far from the Minimum Completion Criteria (KKM). Learning using textbooks sometimes does not provide a space for students to construct independently regarding the discovery of previously learned concepts, but directly give an explanation in the form of a description of the material. The existing teaching materials are only limited to memorize materials compared to the application of concepts. The limited use of teaching materials also does not give students the opportunity to carry out self-evaluation. Tools in the form of learning media will help the effectiveness of the learning process and as a tool to convey the message and content of a subject matter. According to Asnawir (2015: 15) said that research

showing that the media has succeeded in showing its superiority in helping teachers in conveying learning messages is quickly and more easily captured by the students. In addition, they also have positive strength and synergy that is able to change their attitudes and behavior towards creative and dynamic change. The development of Information Technology that is able to process, package, display and disseminate learning information both audio, audio-visual and even multimedia, has been able to package settings and reality learning becomes more engaging and provides psychological conditioning to the learner no matter where they are.

The results of a preliminary study conducted by researchers at Madrasah Ibtidaiyah (MI) Al Khoiriyah, Tapos District, Depok City, with the interview method to grade 5 teachers, information was obtained that the teacher carried out learning remotely (PJJ) starting from the even semester of the 2019/2020 school year until now only uses media in the form of textbooks and assessment books (BUPENA) assisted by Whatsapp media Group as a tool for delivering distance learning materials. From the information obtained above, it is evident that the distance learning process uses only one material and limited learning resources. Learning using textbooks sometimes does not provide space for students to construct independently regarding the discovery of previously learned concepts, but directly provide an explanation in the form of a description of the material. The existing teaching materials are only limited to memorize materials compared to the application of concepts.

The form of learning that can be done by teachers and students and can be done during the Covid-19 pandemic is online learning. According to Moore, Dickson-Deaane, and Galyen, online learning is learning using the internet network with accessibility, flexibility, and the ability to come up with different types learning interactions (Sadikin & Hamidah, 2020,). In this online learning can effectively carry out distance learning even though students and teachers are in different places.

The development of Information Technology that is able to process, package, display and disseminate learning information both audio, audio-visual and even multimedia, has been able to package the settings and reality of learning become more attractive and provide psychological conditioning to the learner wherever they are. Previous research on the development of learning video media conducted by Asa Anfaida Maslina (2019) in the development research discussed the process of developing audio media-based science teaching materials visual proshows and PowerPoints in the learning process using the help of LCD Projectors in the classroom. The next research suggestion in this study is to develop video-based teaching materials in lessons and other materials. In this learning media development research, it only uses one learning room that can only be accessed in the classroom, during the Covid-19 pandemic, it requires students and teachers doing distance learning, that way its use is no longer usable.

The use of limited learning spaces carried out in the classroom in the previous research that has been described above is the basis for researchers to develop video-based online learning media to interact and transfer knowledge remotely. The development of online learning utilizes several platforms in the form of applications, websites, social media, and learning management systems (LMS). These various platforms are used to support the online learning process starting from the learning room using the learning management system (LMS), delivering material using videos, discussions about the material, to the evaluation of student learning outcomes on the material that has been studied.

The development of online learning media based on learning videos that will be used by researchers today is with Goggle Classroom as a Learning Management System (LMS), the FIlmora application to create material based on learning videos, in the process of evaluating learning using google form. In the use of video-based online learning media using the platform, teachers are expected to be able to choose and prepare teaching materials that are in accordance with the principles of development so that students can achieve the expected competence. The teaching materials developed can be organized in a form of teaching materials related to pedagogic competence and professional competence. Thus through this platform can allow students to learn independently unlimited space and time and can be repeated. Its use at the time of carrying out activities distance learning. As a form of effort to take advantage of technological developments and as part of online learning media in the distance learning process, this research is aims to develop a model of science teaching materials in class V online learning. With this, it is necessary to conduct Research and Development (Research and Development) in the form of developing teaching material products as online learning media

The development research design model used is a model compiled by Walter R. Borg and Meredith D. Gall or commonly known as the Borg and Gall model. As for the procedure for developing online learning media using the Dick and Carey model. The selection of a teaching material development model approach with the Dick & Carey model is based on various practical-academic considerations in the development of teaching materials.

Thus the researcher determines the research method to be used, namely the Borg & Gall model, while for the procedural method to develop teaching materials using the Dick & Carey model.

A. Tinjauan Theory

A. Learning and Learning

a) Understanding Learning

The development of natural man's efforts to achieve progress for himself is closely related to the learning process. The various activities carried out to enhance or increase knowledge, skills, appreciation, attitudes, and reasoning depend on how the porses learn. Learning activities that are well designed and in accordance with the expected goals will be achieved if a thorough understanding of learning concepts has been obtained. Learning is the result of the interaction between stimulation and response. A person is considered to have learned something if he can show a change in his behavior (Slavin, 2019, p. 143). A learning reaction or response to the stimulus provided by the teacher. With this, what is given by the teacher (stimulus) and what is received by the learner (response) must be observable and measured as evaluation material in learning.

Learning in a broad sense can be interpreted as a psychophysical activity leading to complete development. Then in a narrow sense, learning is intended as an effort to deepen the material knowledge which is part of the activity towards the formation of a complete personality (Sardiman, 2018, p. 22).

Learning has four important principles, namely: (1) learning is a process of behavior change due to experiences or exercises carried out consciously, (2) changes in learning is relatively sedentary, (3) learning is a change in behavior that is positive and provides benefits for the individual, (4) learning is a directed change in achieving goals certain (Arief, 2017, p. 126).

From the definition above, learning is a change in behavior that is formed because of the experience and knowledge that a person has. The experience is obtained from interaction with his environment as well as through the knowledge he has gained.

B. Science Learning

Natural science comes from three related terms, Science, Science and Nature. Knowledge is everything that is known to the sweetheart. In human life, a great wealth of knowledge is possessed, knowledge of religion, education, health, economy, politics, social, and the surrounding nature are examples of knowledge possessed by man. Natural knowledge means knowledge of the universe and its contents. Science is knowledge that is scientific, knowledge obtained scientifically, artinta obtained by the scientific method. With this understanding, science can be interpreted as a science that studies the cause and effect of events that exist in this nature (Graduates, A. W., 2014, p. 23).

Natural Science (IPA) deals with nature by systematically finding out so that IPA is not only mastery of a collection of knowledge in the form of facts, concepts or prototypes =principle only. But it is a process of discovery. In science learning, teachers play an active role in encouraging students to achieve the desired learning goals, so that students can immediately hypothesize and prove from theoretical concepts. Thus, it can be said that science learning is an interaction that occurs between students and teachers along with learning resources that combine various fields of science studies in order to students can learn themselves and the surrounding nature as a whole through the scientific method to be able to solve problems and apply them in everyday life.

C. Video-Based Online Learning Media

a) Learning Media

The word media comes from the Latin medius which literally means 'middle', 'intermediate' or 'introductory'. Gerlach & Ely (1971) in Azhar Arsyad said that the media when understood in general is human, material, or events that build conditions that make students capable acquiring knowledge, skills, or attitudes (Arsyad, 2019,

p. 29). Hamidjojo and Latuheru in Azhar Asyad (2019) suggest that the media as a form of intermediary used by humans to convey or spread ideas, ideas, or opinions so that the idea, idea or opinion put forward reaches the intended recipient.

Based on the above understanding, it can be formulated under the learning medium is everything that can be used to channel messages and can stimulate thoughts, feelings, attention, and the willingness of students so that they can encourage the process of learning and learning is a reality that cannot be denied its existence. Teachers are aware that without the help of media, learning materials will be difficult for students to understand and understand, especially complicated and complex learning. Each learning material has varying degrees of difficulty.

On the one hand, there are learning materials that do not require learning media, but on the other hand there are learning materials that require learning media, especially during a pandemic like now. This, where students are required to learn remotely from home. There are many learning media, ranging from very simple to complex, ranging from those that only use the senses of the eye to the combination of more than one sense. From those that are cheap and do not require electricity to expensive and highly dependent on hardware. Along with the development of technology, a variety of new teaching materials have emerged that are increasingly sophisticated, starting from the development of printed teaching materials, then expanding to audio teaching materials, to audio-video teaching materials. This all shows that the form of teaching materials always keeps up with the development of technology and science.

Research Methodology

A. Research Objectives

The objectives of this study are:

1) To develop video-based online learning media on science subjects for class V MI Al Khoiriyah Depok
2) To analyze the feasibility level of video-based online learning media in science lessons for the MI Al Khoiriyah Depok class.
3) To analyze the level of effectiveness in improving learning outcomes through the use of video-based online learning media in science subjects class V MI Al Khoiriyah Depok

B. Research Place and Time

This research and development took place and location at MI Al Khoiriyah located on Jl. KH. I.Djarnuji RT.02/04 Tapos Village, Tapos District, Depok City.

C. Research Methods

The research methodology used in this study is Research and Development or Research and Development. Sugiono (2019b, p. 407) explains that "Research and development is a research method used to produce a particular product, and test the effectiveness of that product." Borg and Gall in Arief (2017, p. 153) state that Research and Imaging is a method for developing and testing a product.

D. Data Collection Techniques

Data collection techniques in class action research are carried out through:

1) Interview

This method is carried out by interviewing one of the teachers of the Basic Computer and Network subjects to find out the general characteristics, namely including age, types before conducting learning related to the material, which includes basic competencies, achievement indicators, learning tools and resources, materials, learning methods, media used, and difficulties experienced by students. This is done to determine the learning objectives to be achieved.

2) Observation

Observation is a way of collecting information materials that are carried out by making systematic observations and recording of phenomena that are used as objects of observation. When making observations researchers are not involved in student activities and do not interact with them directly.

3) Questionnaire

The type of questionnaire used in this study was a mixed questionnaire. Mixed questionnaires are personal report instruments filled out by respondents and include questions that are fully open and closed (Basuki Wibawa, Mahdiyah, 2014). This questionnaire uses a Likert scale. The Likert scale is used to ask individual respondents to answer a question with various possible answers very good, good, quite good, not good, and very poor after that the data obtained from the Likert scale are values given with the aim of measuring quality (Basuki, Wibawa & Mahdiyah, 2014). In this study, the questionnaire was used to collect data from the evaluation of media experts, material experts, learning design experts and students at the trial stage. This questionnaire serves to find out the response to the use of video-based online learning media.

Results of Research and Discussion

Based on the research conducted, the results of the study were obtained as follows:

Model Development

a) Needs Analysis

At the needs analysis stage in the development of online learning media based on this learning video. Through interviews, researchers tried to analyze students' needs in learning during the COVID-19 pandemic, which requires students to follow learning from home. Researchers conduct an analysis that includes general characteristics, basic competencies and learning styles of learners.

1) General Competencies

From the aspect of the distance learning process carried out by teachers on class V students at MI Al Khoiriyah Depok starting from the even semester of the 2019/2020 school year until now, only using media in the form of textbooks and assessment books (BUPENA). Assisted by the WhatsApp Group media, the teacher delivered a lesson in the form of a summary of the material followed by giving assignments. Several times teachers have done face-to-face using the Google Meet application as an additional means of delivering material and discussing material that is not yet understood by students.

Seeing this from the aspect of infrastructure owned by students with smartphone pa in general is not adequate, because the time for students to study from 08.00 – 10.00 in the morning many could not keep up because the means in the form of smartphones were brought by this old o rang worked. From the economic aspect, some students are classified as middle-abilities, students are classified as capable, so not all students at the same time can use smartphone to learn. This is one of the basic penalty to develop learning media products berbasis video, through the *Learning Management System (LMS)* Google Classroom makes it easier for students to access learning materials at any time with not bound by time, and spaces that allow students to be able to learn independently, besides video-based learning media can also be saved for learning Recurring.

2) Basic Competencies

Science subjects are one of the subjects contained in the 2013 curriculum at the elementary school level.

Based on the results of observations and interviews with teachers and students, it causes problems under learning using textbooks, sometimes it does not provide space for students to construct independently regarding the discovery of previously studied concepts, but directly provide explanations in the form of material descriptions. The existing teaching materials are only limited to memorized materials compared to the application of concepts. That way, learning objectives are not achieved optimally which will have an impact on low student learning outcomes.

3) Learning Styles

Learning styles describe how learners capture the information obtained in the learning process. With this, researchers can design learning media to emphasize more on the suitability of student learning styles, with the aim of being able to provide a new thing, especially in the distance learning process that has been carried out so far. To find out the learning style of students researchers use learning style questionnaire.

Based on the results of the assessment of student learning styles, the results of 43% of students with visual learning styles, 22% auditory and 35% kinesthetic were obtained. From these results, students' learning styles are more visible from the visual aspect, so that learning media is designed to emphasize more on the aspects of images and writing. The limitations of students in distance learning activities can only use the learning style auditory and visually.

With this, researchers design learning media to emphasize more on visual ability in the form of images and auditory ability in the form of hearing material explanations. The learning video media that will be developed combines the two learning styles, with the aim of providing something new, especially in the distance learning process that has been carried out so far.

Based on the results of the analysis mentioned above, it can be concluded that the use of video-based online learning media is needed in the hope that teachers can choose and prepare teaching materials that are in accordance with the principles of development so that students can achieve the expected competencies. The teaching materials developed can be organized in a form of teaching materials related to pedagogic competence and professional competence. Thus through this learning medium can allow students to learn independently not limited to money and time and can be repeated its use when carrying out distance learning activities.

Early Draft Model

The design of this learning media development is made in a learning video that can be accessed online and independently by students using the google classroom application. By using several applications, researchers developed science learning videos as one of the learning media that can be used in distance learning. At the stage of making images and animations using CorelDraw 7 and Photoshop CS6 software, while in making videos using the Fimora 9 application. After the creation of learning media is complete, it is conveyed to students through google classroom as a means of learning in distance learning activities. The stages carried out to develop this video media researchers made flowcharts and storyboards.

After the learning media is dirancang, then the next step is the product development stage that will be tested for the product. The design stage was carried out from October 30, 2020 to November 6, 2020. The design stages include a summary of the material to be poured in the video, making a video background, making a moving teacher animation, looking for instrumental music and recording sound.

Model Feasibility Test Analysis Results

a) Formative Evaluation

Previously, expert and individual tests have been carried out, then this multimedia learning has been tested in small groups. With the learning media that has been uploaded into google classroom via the link https://bit.ly/3lvakh8 students who belong to this small group can access the video media, the access given is only limited to a small group of three people selected.

The criteria for small group testing are the criteria of one student with high learning achievement, one student with moderate learning achievement, and one student with low learning achievement, referring to the results of the report card score for the even semester of the 2019/2020 academic year.

The results of small group trials show that on average it reaches 84% if interpreted using the interpretation of validity, this learning Multimedia product is in the "Decent" qualification. Then after testing the feasibility level, then a product revision is carried out based on advice from material experts, media experts, and students after using the product. The results of the product revision will be used at a later stage, namely a large group test to see the level of effectiveness of the product.

b) Summative Evaluation

After conducting small group tests and revisions to the product, the researchers then conducted a test in a large group to test the effectiveness of developing online learning media based on class V science learning videos at MI Al Khoiriyah Tapos Depok by providing a pre-test and posttest in the form of multiple-choice questions that have been tested for their validity level, u For the Pre Test score obtained the average learning outcome or Mean of 53.70. As for the Post Test score, the average score of learning outcomes is 71.74. In addition, a *Paired Samples Test was also carried* out to find the effectiveness of using video-based online learning media on learning outcomes in science subjects in class V MI Al Khoiriyah students.

Based on the results of the "Paired Samples Test" which has been carried out with a degree of confidence of 95%, it is known that the significance value (2-tailed) is 0.000 < 0.05 so that it can be concluded that there is a significant average difference between the results of the Pre Test learning and the Post Test, which means that the use of online learning media based on learning videos is said to be effective in improving learning outcomes for science subjects in class V MI Al Al students. Khoiriyah.

Research Limitations

During the COVID-19 pandemic, researchers experienced limitations in the spread of instruments. Assessments aimed at material experts and learners are uploaded via google form as a means of disseminating instruments to material experts and learners. Due to time constraints, in conducting research on video-based online learning media products, it is only limited to one school, namely class V MI Al Khoiriyah students so that research and development trials are only in the limited trial stage. The presentation of material in the development of online learning media products is only in the form of video, text, background sounds and animations.

In this learning media, it emphasizes the visual (form) aspect considering the characteristics of the science material of the human organ of motion discusses more about images, in addition to considering the large and clear font size so that students can understand the concepts presented in this video-based learning media. In the end, the media was combined and uploaded into Google Classroom as a means of distance learning. Thus, learning media in distance learning activities can only be accessed to class members.

Thus, researchers hope that in the next study this limitation can be used as a reference to be able to develop models better and perfectly, in order to further improve the quality of learning.

Conclusions and Suggestions

Conclusion

Based on the development process and trial results of Video-Based Online Learning Media in Class V Science Lessons of MI Al Khoiriyah, it can be concluded as follows:

a) The development model used is a combination of the Borg and Gall model with Dick and Carey which consists of: 1) Initial research and data collection, 2) Product development planning, and literature studies. 3) Model design, 4) Expert validation (one to one test), 5) Small group test, 6) Large group test, 7) Final model, 8) Experiment (One Group Pretest and Posttest).

b) The feasibility of learning media products with an average percentage of material expert test results of 89% of criteria is very feasible, the percentage of learning media expert test results of 84% of criteria is very feasible to use.

c) To determine the level of effectiveness of the use of video learning-based online learning media, a pre-test and post-test trial was carried out on 23 students of class V MI Al Khoiriyah From the results of the analysis of pre-test and post-test data, a t-test (t-test paired) with a level of confidence of 95% obtained sig. 0.000 < 0.05 shows that student learning outcomes have differences between before using and after using. This means that the use of video-based online learning media is said to be effective.

Suggestion

There are several suggestions that researchers want to convey, namely:

a) If in its use there are several weaknesses in order to immediately make improvements and updates, so that the weaknesses contained in this media do not have a major effect on students.

b) For further utilization, the product is recommended to be tested to a larger group with a broader subject matter. This learning media product can also be further developed by using 3D animation to be more dynamic in supporting learning activities.

c) This learning media should not be used as the only learning resource that can be used during the Covid-19 pandemic, because teachers must continue to improve the quality of learning that is very innovative, creative and effective.

d) This research can be used as a reference material for subsequent researchers in conducting research and development of video-based online learning media using the Borg and Gall and Dick and Carey development models.

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