Development of Animation Video on YouTube Channels as an Alternative Learning Media during the Covid-19 Pandemic

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Abstract

Distance learning is held as an effort to continue to present the teaching and learning process for students during the COVID-19 pandemic. Many students admitted that they were not happy with the implementation of distance learning. This study aims to describe the development of Animaker application-based learning videos on the YouTube channel as an alternative to distance learning media during the covid-19 pandemic. This study uses a Design-Based Research (DBR) model. This study shows an overview of the stages of developing a learning video which includes needs analysis, material preparation and product design according to the learning objectives to be achieved, product implementation, and evaluation. Questionnaire technique is used as a method of collecting data at the stages of needs analysis and evaluation. At the needs analysis stage, the researcher gave questionnaires to 114 students who took part in learning Islamic Religious Education by distance learning or online, while at the evaluation stage, validation was carried out by two experts and the video learning trial was conducted by six students. The material expert validation in the two learning videos developed received very good and proper predicates (92% and 87%) from material experts. Meanwhile, the validation of media experts received very good and proper predicates (94% and 94%). Then, the results of student assessments in small groups showed good scores with an average score of 90% with very good and decent predicates. This indicates that the learning video developed is suitable for use as an alternative learning media during the covid-19 pandemic.

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INTRODUCTION

Distance Learning has been implemented in Indonesia since mid-March 2020. This is done as a form of preventing the spread of the COVID-19 virus, especially in educational institutions. Various methods and learning media are sought to facilitate the teaching and learning process within the framework of distance education. Distance learning is not without obstacles, difficulties in utilizing media and learning resources are a real problem. Based on a survey by the Indonesian Child Protection Commission (KPAI) on 1,700 students of various levels of education on April 13-20, 2020, around 76.7 percent of them admitted that they did not happy participating in distance learning (PJJ). Only 23.3 percent of respondents find PJJ impressive (Andany & Nurregina, 2020; Mediana, 2020).

This is certainly far from the ideal condition that learning should make students happy, have interest, and be motivated to learn. Schools are trying to overcome these problems by using a variety of learning media as a means to make distance learning easier and more enjoyable. The researcher conducted a survey in one of the schools about the media that was most accessible and most liked by children, especially in the subject of Islamic Religious Education. After a survey was conducted of 137 students who took the

subjects of Islamic Religious Education, the majority of students chose the YouTube channel as the most preferred learning media and facilitated the distance learning process.

YouTube provides various types of videos including learning videos (Alon & Herath, 2014; Scagnoli dkk., 2019). YouTube can act as a complementary learning tool to facilitate the learning experience when the videos watched are relevant to the learning topic (Moghavvemi et al., 2018). Learning video is included in the classification of audio-visual technology. Audio-visual technology is a way of producing and delivering material using mechanical and electronic equipment to present audio and visual messages (Barbara, B. & Richey, C., 1994). The use of online videos is a common practice today amongst education professionals. Interactive features in videos are constantly evolving and a recent trend is the integration of interactive elements and web content into educational videos (Giannakos dkk., 2014; Kleftodimos & Evangelidis, 2016). The use of video in online learning has a strong relationship with a positive overall learning experiences and perceptions of the impact of video on learning. In addition, learning videos can increase feelings of engagement with content because of the learner's control over the media and the presence of the educator.

Some of the studies above show that learning videos are quite effective in increasing students' engagement with learning content and providing positive learning experiences and perceptions. However, the studies above generally discuss learning before the covid-19 pandemic, while the current learning problem is student saturation in undergoing distance learning during the covid-19 pandemic, especially in Islamic Religious Education subjects. Islamic Religious Education subjects in elementary schools generally contain religious concepts, principles, and practices. Problems in Islamic Religious Education subjects experienced by students during the covid-19 pandemic such as difficulty understanding the material, feeling bored, feeling burdened by practical tasks, and lack of spiritual encouragement and role models from educators. In addition, there is also no research that specifically discusses the use of learning media, especially the development of learning videos on Islamic Religious Education subjects in elementary schools. Researchers feel the need to conduct research and development of learning videos on YouTube channel for Islamic Religious Education subjects during the distance learning period as an alternative learning media during the covid-19 pandemic to provide student engagement with learning content and produce positive learning experiences and perceptions.

A framework is needed to produce a good learning video. Researchers in this development and research try to elaborate on several concepts such as the concept of an explanation video (Köster, 2018), Mayer's multimedia concept (Mayer, 2009), as well as the concept of the subject matter of Islamic Religious Education (Tafsir, 2017). In this study, the concept of Design-Based Research is also used as a development model and the Animaker application as an editing platform for producing learning videos. The elaboration of some of these concepts into a separate framework is also a novelty offered from this research and development.

Meanwhile, the objective of this study is to describe the development of Animaker-based learning videos using the Design-Based Research development model. This study aims to describe each phase of the Design-Based Research model in the development of Animaker-based learning videos.

LITERATURE REVIEW

The video-based learning model implies a challenging experience on a personal level that supports motivation and a deep learning approach. This adds a solid foundation for reflection, which encourages active student-centred learning (Backåberg et al., 2019). Video is one of the most powerful learning media that captures and distributes information while providing a stimulating learning environment where students can better understand and retain information (Sablić et al., 2020).

The design and development of video-based environments should seek to increase students' intrinsic motivation and make users feel familiar. For example, the interface and functionality of the environment should be user-friendly by incorporating standard user-centered design principles. Therefore, usability testing and intuitive design in this environment is very important (Giannakos et al., 2016).

Video-facilitated education is a technique that is integrated into various educational models. It has been used for decades, for example, in face-to-face settings and in asynchronous or correspondence courses. In the past, distribution channels for instructional videos included television, as well as physically delivered media, such as DVD cassettes. Recently, however, through the maturation of quality broadband streaming video, institutions have made education truly possible through video, which is now accessible to a wider audience. This development has been accelerated by the inclusion of online education platforms and innovative business models (Köster, 2018).

Learning video that will be designed and developed in this research is an explainer video. Explainer videos focus on a specific topic and explain it through the use of visuals, narration, or moving images. A number of approaches have been established over the last few years most of which use a whiteboard. Explainer videos differ from tutorial videos in that they don't always describe something in a linear fashion or describe a step-by-step process, but can focus on any topic (Köster, 2018).

Krämer and Böhrs (2016) in their study of the effectiveness of explainer videos, described the use of explainer videos as a successful tool when teaching students with little prior knowledge of a subject. Knowledge transfer in videos tends to be simple, videos are generally short in duration, and go straight to the points that can be taught. Köster (2018) notes that explanation videos usually stay tied to one topic, which is explained on the assumption that the viewer has no prior knowledge, and that the subject is not connected to other topics.

Shoufan (2019) in his research suggests four significant features to facilitate the cognitive value of video, namely initial training, modality, spatial proximity, and embodiment. Anderson, et al. (2016) on the other hand, reveals that video modelling with narration is more efficient than video modelling without narration. In addition to the use of narration, Teng (2019) in his research shows that videos equipped with written texts provides a better understanding.

Video-facilitated learning is a type of multimedia learning. This is in accordance with the definition of multimedia learning put forward by Mayer (2008), namely the learning process through words and pictures. Words can be either printed or spoken text while images can be in static form, such as illustrations, photos, diagrams, charts, or maps, or in dynamic forms, such as animations or videos. Examples of multimedia learning include watching and listening to narrated animations, reading science textbooks, playing educational video games, or attending PowerPoint presentations.

The most relevant elements in learning science are (a) multiple channels, namely the idea that humans have separate channels for processing visual and verbal material; (b) limited capacity i.e. the idea that each channel can only process a small amount of material at a time; and (c) active processing i.e. the idea that deep learning depends on the learner's

cognitive processing during learning for example, selecting, organizing, and integrating (Mayer, 2008).

Mayer's theory proposes that multimedia presentations of words, images, and sounds are dynamically selected and arranged to produce easy-to-understand mental constructs. Furthermore, the theory suggests that more knowledge can be imparted when new information is easily integrated with prior knowledge. In addition, optimal learning occurs when visual and verbal materials are presented simultaneously. This is known as the 'multimedia principle'. However, it is dishonest to assume that a simple mixing of text and graphics will automatically result in optimal learning. Important design principles come into play, including the provision of appropriate and coherent pictorial, verbal information, along with careful selection of relevant words and images to prevent overloaded channels (Mayer, 2009).

Mayer's theory has twelve evidence-based multimedia design principles which can be further subdivided into principles for reducing irrelevant processing, for managing critical processing, and for encouraging generative processing. (Mayer, 2009).

Table 1. Mayer's 12 Principles of Multimedia

1.	Coherence	
2.	Signaling	
3.	Redundancy	Reducing Extraneous Processing
4.	Spatial contiguity	
5.	Temporal contiguity	
6.	Segmenting	
7.	Pre-training	Managing Essential Processing
8.	Modality	
9.	Multimedia	
10.	Personalization	
11.	Voice	Fostering Generative Processing
12.	Image	

The subjects that will be loaded on the learning video media are Islamic Religious Education subjects. The teachings of Islam require practice from its adherents, to achieve this requires skills. However, the teachings of Islam must also be understood first. Islamic Religious Learning in schools tries to facilitate this by providing materials in the form of concepts and principles to support students' understanding of Islamic teachings (Tafsir, 2017).

Concepts in general can be said as a definition of a thing as well as explaining the essence of it. Tafsir (2017) as quoted in his article states that in the treasures of Islamic knowledge there are two types of terms, definition of *lughawi* or the definition of language and the definition of *istilahi* namely definition of terminology. Both of these are types of concepts. Tafsir (2017) also mentions that teaching concepts at the elementary school level, especially Islamic religious education subjects, students are sufficient to memorize the concept and have not been required to understand it.

Meanwhile, the principle is a statement about the relationship between several concepts. Tafsir (2017) explains that the principles in Islam can be separated into at least two kinds. First, it is doctrinal, namely principles in the form of teachings that must be taught and accepted as they are. Second, principles that are not doctrines, meaning that these principles are still *khilafiyah* and are still being debated by scholars.

METHODOLOGY

This study uses the Design-Based-Research (DBR) model. Design-Based-Research (DBR) is a systemic approach to innovation planning and implementation that emphasizes an iterative approach to product design with ongoing collaboration involving practitioners. The focus of DBR is thinking for design decisions and changes in an effort to produce technology-based learning (Huang et al., 2019).

The first phase of the DBR approach is analysis and exploration which includes problem identification. The main products resulting from this phase are both practical and theoretical. Practically, this phase provides a clear understanding of the problem and its origins. In addition, information is also obtained about the opportunities and limitations that exist contextually. Theoretically, this phase produces a descriptive and analytical understanding of the problems that arise (Huang et al., 2019). Participants in this phase were 114 elementary school students who took the subject of Islamic Religious Education. Data collection is done by using a questionnaire technique.

The second phase is design and construction which is a coherent process that is followed and documented in order to arrive at an interim solution to the problems identified in the previous phase. Design refers to generating potential solutions to problems, while construction refers to the process of taking design ideas and implementing them. The result of this phase is a research proposal that includes details of the intervention methodology, implementation, and evaluation of the proposed solution, this is because most of it is the stage of data collection and research analysis. (Huang et al., 2019).

The third phase is evaluation and reflection. Evaluation refers to empirical testing carried out with the design or intervention that has been built. Reflection involves active consideration of the various issues involved in research and development with the aim of generating theoretical understanding. The empirical findings and critical reflection are then used to accept, correct, or disprove the conjecture, framework or principle described in the design document or embodied in the actual intervention. (Huang et al., 2019).

Participants in this phase are an expert on learning media and an expert on Islamic Religious Education subject matter. In addition, six students also tested the developed product. In this study, the instrument used is an elaboration of Mayer's multimedia principles and the concept of Islamic Religious Education subjects.

Data was collected using a questionnaire technique, while data analysis was carried out descriptively.

FINDINGS AND RESULTS

The development of Animaker-based learning videos using the Design-Based Research model includes the following three phases:

Phase 1: Analysis and Exploration

Teachers and schools are trying various things to keep students able to follow the learning well and have fun. One of the methods used is to use various types of learning media. Researchers identify problems and analyze needs in one of the elementary schools in Surakarta, Central Java. The learning process in these elementary schools, especially Islamic Religious Education subjects during distance learning, uses a variety of media and learning resources such as YouTube channels, Islamic Religious Education textbooks, companion books, WhatsApp groups, and so on. After a survey was held in August 2020 of 114 students who took the subject of Islamic Religious Education and Morals, the

majority of students chose the YouTube channel as the most preferred learning media and facilitated the distance learning process.

Phase 2: Design and Construction

The second phase is design and construction which is a coherent process that is followed and in order to arrive at an interim solution to the problems identified in the previous phase. A more detailed phase begins with the pre-production stage which includes selecting the material to be developed and making stories in the form of learning videos and lines containing narration or dialogue that will be included in the learning videos. The material chosen for the learning video in this development research is material about "perilaku kasih sayang". The selection was based on the syllabus of Islamic Religious Education subjects in the 2013 curriculum.

Next is the production stage. At this stage the developer uses the animaker editor platform. Animaker is a website-based animation creation software and its operation is done online. In this application, the required background and animated characters are available. In addition, users can also create their own characters so that the videos they produce become more personal. Animaker video editor platform selection is based on ease of access, completeness of features, ease of navigation interface, does not require large storage memory capacity on the device because it uses cloud-based storage memory.

Phase 3: Evaluation and Reflection

Expert Validation

The expert validation stage in this research and development was carried out by two experts. The first is an expert on Islamic Religious Education subject matter and the second is an expert in learning media. The validation carried out by the two experts was carried out based on Mayer's 12 multimedia principles which were elaborated on the concept of Islamic Religious Education subjects.

The validation carried out by subject experts on Islamic religious education in video 1 obtained a percentage of 92% with very good criteria. Meanwhile in video 2, it gets a percentage of 87% with very good criteria. Furthermore, the validation carried out by learning media experts in the two learning videos obtained a percentage of 94% with very good criteria.

Based on the validation of the two experts above, it can be concluded that the two learning videos developed received a very good assessment and deserved to be presented in real learning.

Limited Trial

After the two learning videos were declared feasible by material experts and learning media experts, the next step was to conduct a limited trial of six students and the following results were obtained:

Table 4. Video 1 Limited Trial Results

Assessment Indicators	Total Score	Score Max	Percentage	Criteria	Conclusion
The material in the video corresponds to the topic of discussion	23	24	96%	Very Good	Decent
In the video, there are sounds, images, and writings about learning material.	22	24	92%	Very Good	Decent

The writing in the learning video is not too much and is appropriate.	20	24	83%	Very Good	Decent
The text in the video can be read clearly.	23	24	96%	Very Good	Decent
Pak Asrori and Ucok's voices sounded quite clear.	23	24	96%	Very Good	Decent
The pictures in the video correspond to the material being discussed.	21	24	88%	Very Good	Decent
The material in the video is easy to understand.	20	24	83%	Very Good	Decent
Total	*21,7*	*24*	*90%*	*Very Good*	*Decent*

Table 5. Video 2 Limited Trial Results

Assessment Indicators	Total Score	Score Max	Percentage	Criteria	Conclusion
The material in the video corresponds to the topic of discussion	20	24	83%	Very Good	Decent
In the video, there are sounds, images, and writings about learning material.	21	24	88%	Very Good	Decent
The writing in the learning video is not too much and is appropriate.	22	24	92%	Very Good	Decent
The text in the video can be read clearly.	22	24	92%	Very Good	Decent
Pak Asrori and Ucok's voices sounded quite clear.	24	24	100%	Very Good	Decent
The pictures in the video correspond to the material being discussed.	21	24	88%	Very Good	Decent
The material in the video is easy to understand.	22	24	92%	Very Good	Decent
Total	*21,7*	*24*	*90%*	*Very Good*	*Decent*

In limited trial, video 1 obtained an average score of 21.7 with a percentage of 90% and a very good predicate. The same thing also happened to video 2 where video 2 obtained an average score of 21.7 with a percentage of 90% and the predicate was very good. Based on the results of the limited trial on the two learning videos above, it can be seen that all of the assessment indicators tested received a very good assessment and deserved to be presented in real learning as alternative learning media during covid-19 pandemic.

DISCUSSION

Theoretically, the use of YouTube as a learning medium is not new. Various studies in various fields of education have revealed the relevance of YouTube as a learning tool

(Aldallal dkk., 2019; Muhammed dkk., 2014; Saed dkk., 2021; Shoufan, 2019). Moghavvemi, et al. (2018) in his research stated that YouTube can be used as a complementary learning tool to facilitate the learning experience when the videos watched have relevance to the learning topic. Mujianto (2019) in another study concluded that YouTube as a learning media can have an impact on students' interest and motivation to learn. Scagnoli, et al. (2019) in his research revealed that the use of video in online learning has a strong relationship with a positive overall learning experience and perceptions of the impact of video on learning. In addition, instructional videos can increase feelings of engagement with content because of the learner's control over the media and the presence of the educator.

Some things that can be noted from the learning videos developed in this development are, voice actors or narrators are teachers or educators who have been known to students so far. This makes the audience in this case the students become more interested in observing the learning video. This is in accordance with what Barave said as quoted from Mayer (2009) providing evidence that people may be more affected by online verbal messages when they hear the speaker's voice coming from people like them in terms of gender, race, ethnicity, or emotional state. In addition, the narration in the learning video also uses a conversation format between Pak Asrori (teacher) and Ucok (student). Narrative delivered in a conversational format will make the learning video more communicative and students learn better. This is appropriate with what Mayer (2009) has explained in his book entitled Multimedia Learning where a person can learn better if the material is narrated using conversational language compared to if the material is narrated informal language.

Another thing that is of concern in this research and development is the presence of teacher animations in learning videos. The video developed in this study displays teacher animation in it, besides that, student animation is also presented which reflects students who are active in learning. Vangog et al. (2014) in his research revealed that students' learning performance was better when watching learning videos that had teacher modeling in them compared to learning videos that did not have it. This is in line with what was stated by Wang and Antonenko (2017) that the presence of teachers in learning videos can improve student learning performance. The same thing was also revealed by Anggraini et.al (2020) that the presence of teachers in learning videos affects the academic achievement of students.

The design and development of video-based environments should seek to increase students' intrinsic motivation and make users feel familiar. For example, the interface and functionality of the environment should be user-friendly by incorporating standard user-centered design principles. Therefore, usability testing and intuitive design in this environment is very important (Giannakos et al., 2016). The use of YouTube as a platform for showing learning videos is certainly familiar to most students. Students do not need to install additional applications on their smartphones because YouTube is usually installed automatically on their smartphones. In addition, YouTube's interface is also very intuitive and easy to understand.

The learning videos developed in this study present knowledge transfer which tends to be simple, besides that the learning videos are also short in duration, and the materials contained in the form of important points of the topics studied. The results shown in this study are in line with what was stated by Krämer and Böhrs (2016) in their study of the effectiveness of explainer videos. In general, the effectiveness of learning videos can be seen from the physical design and cognitive design. The physical design of an instructional video is determined by the length of the video, the speed of the action, and the speed of the narration. Based on the sophistication of the physical design, the quality of instruction can be greatly influenced by video accessibility, technical quality, and timing (Swarts, 2012). Meanwhile, cognitive design determines the level of students'

understanding of a video, as well as whether students will be able to adopt and apply the content learned. This design step considers the risks that can burden users with irrelevant information (Swarts, 2012).

Broadly speaking, the development of this learning video includes three phases, starting with problem identification and needs analysis, then continued with the design and construction of two learning videos, and the last phase is evaluation and reflection which is realized by validation or feasibility test by two experts, namely Islamic Religion Education material experts and learning media experts as well as a limited trial which was attended by six participants. The use of video as an alternative learning media during the covid-19 pandemic is also considered appropriate because traditional learning is not possible. Chotiyarnwong, et al. (2021) in his research stated that video-based learning was found to be non-inferior to traditional lecture-based education relative to both knowledge attainment and participant satisfaction. In addition, video-based learning has received positive perceptions from students and is compatible with the learning system during the covid-19 pandemic (Pal & Patra, 2021).

CONCLUSION

Video-facilitated education is a technique that is integrated into various educational models. It has been used for decades, for example, in face-to-face settings and in asynchronous or correspondence courses. The use of video in online learning has a strong relationship with a positive overall learning experiences and perceptions of the impact of video on learning. In addition, learning videos can increase feelings of engagement with content because of the learner's control over the media and the presence of the educator. The learning video developed in this study uses a Design-Based Research model which includes three phases and in general the learning videos developed are very good and deserve to be presented in actual learning as an alternative learning media during the covid-19 pandemic to provide student engagement with learning content and produce positive learning experiences and perceptions.

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