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The Human Respiratory Systems Learning Video: Validity and Feasibility

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ABSTRAK

Penelitian ini dilatarbelakangi oleh kurangnya ketersediaan media pembelajaran berupa video pembelajaran dimasa pandemi COVID-19 khususnya pada muatan IPA materi sistem pernafasan manusia. Penelitian ini bertujuan untuk mendeskripsikan rancang bangun dan validitas pengembangan video pembelajaran. Penelitian ini menggunakan model pengembangan ADDIE (Analyze, Design, Development, Implementation, dan Evaluation). Subjek pada penelitian ini yaitu ahli isi muatan pelajaran, ahli desain pembelajaran, ahli media pembelajaran, dan siswa kelas V SD. Metode dan instrumen yang digunakan mengumpulkan data pada penelitian ini menggunakan kuesioner. Teknik analisis data yang digunakan adalah analisis deskriptif kualitatif dan analisis deskriptif kuantitatif. Hasil analisis uji validitas memperoleh hasil sebagai berikut. ahli isi materi memperoleh hasil 87,5% dengan kualifikasi baik, ahli desain pembelajaran memperoleh hasil 95,0% dengan kualifikasi sangat baik, ahli media pembelajaran memperoleh hasil 95,0% dengan kualifikasi sangat baik, dan uji coba perorangan memperoleh hasil 95,8% dengan kualifikasi sangat baik. Dengan demikian berdasarkan analisis ini dapat dinyatakan bahwa, produk video pembelajaran ini valid dan layak digunakan pada muatan IPA materi sistem pernafasan manusia

ABSTRACT

This research is motivated by the lack of availability of learning media in the form of learning videos during the COVID-19 pandemic, especially on the science content of the human respiratory system material. This study aims to describe the design and validity of the development of learning videos. This study uses the ADDIE development model (Analyze, Design, Development, Implementation, and Evaluation). The subjects in this study were content experts, learning design experts, learning media experts, and fifth grade elementary school students. The methods and instruments used to collect data in this study used a questionnaire. The data analysis technique used is descriptive qualitative analysis and descriptive quantitative analysis. The results of the analysis of the validity test obtained the following results. content experts got 87.5% results with good qualifications, learning design experts got 95.0% results with very good qualifications, learning media experts got 95.0% results with very good qualifications, and individual trials got 95.8 results % with very good qualifications. Thus, based on this analysis, it can be stated that this learning video product is valid and suitable for use in the science content of the human respiratory system material.

1. Introduction

The development of technology and science indirectly changes all activities of human life in various fields, one of which is education. Education is the initial capital in forming humans who are able to compete in the era of globalization (Muliani & Wibawa, 2019). Education is a benchmark in improving human resources (HR) and determining the progress and character of a nation (Rahmayani et al., 2019). This is consistent with what was proclaimed in the 2013 curriculum which emphasizes character education. Character is a way of thinking and behaving that is owned by each individual which is manifested in thoughts, attitudes, feelings, words, and actions (Rehusisma et al., 2017). Therefore, the learning pattern is required to be able to direct students to not only understand the lesson theoretically, but also be able to be applicative (Mutia et al., 2018). This demand can be fulfilled if the renewal is continued. Innovations in education must continue to be carried out by adapting to existing developments so that educational goals can be achieved. The success of education, especially in the learning process, is influenced by several components, one of which is learning media. Media is a means or tool used to convey messages from sender to receiver. Media is one of the components in learning which contains

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instructional material that is used as a learning resource (Sarnoko et al., 2016). The use of appropriate and interesting media will stimulate the development of students' cognitive, affective, and psychomotor abilities (Mawan et al., 2017). The use of appropriate learning media will create a more meaningful learning experience and facilitate students in learning (Sihkabuden, 2016). Therefore, the media must be designed according to the needs or characteristics of students and learning objectives (Ilmi & Tajuddin, 2020).

Video is one of the learning media that is very often used in the 21st century learning process. Video is a digital learning media that has audio and visual elements that can be created as attractive as possible, so that it can create higher quality learning (Hartanti et al., 2017). The use of learning media in the form of video has the advantage of being able to penetrate space and time, so that learning can be done anywhere and anytime (Handziko & Suyanto, 2016). The use of video in the learning process can train students to be able to develop their imagination, stimulate active student participation, and generate motivation in participating in the learning process (Rakhman et al., 2017). Based on the results of observations and interviews that have been conducted at SD No. 4 Sibangkaja, there are problems where teachers experience difficulties in the learning process, especially in choosing learning media during the Covid-19 pandemic. Referring to Mendikbud circular letter No. 4 of 2020 concerning the implementation of education policies in the emergency period of the spread of Covid-19, the learning system that could initially be implemented face-to-face in schools has now been changed to learning from home (BDR). The implementation of the online learning process is currently more oriented towards the WhatsApp group. The learning method used is limited to the assignment method only. This has an impact on the implementation of the learning process to become monotonous. As professional educators, they must be able to prepare teaching materials carefully and also pay attention to the conditions of the learning environment (Laksana et al., 2016).

With these limitations, learning media must be optimized in online learning, because learning media plays an important role as an intermediary or delivery of information to students (Pradilasari et al., 2019). Each subject or material content has different characteristics so that it requires different learning media. Science is one of the material content that requires learning media for the means of conveying information. IPA discusses natural phenomena that are systematically arranged based on the results of experiments and observations (Lukman et al., 2019). Science has a close study of everyday life, so that learning can be oriented towards the environment around students. This research is based on research that has been done previously: (1) the development of video animation media *motion graphics* in elementary science subjects (Efendi et al., 2020). (2) the development of contextual-based science learning videos on learning during the Covid-19 pandemic (Jundu et al., 2020). (3) the development of an integrated science learning video (Yudiyanto et al., 2020). (4) the development of a water cycle animated cartoon educational video (Putri et al., 2020). (5) development of-based video media *powtoon* in elementary science subjects (Wulandari et al., 2020). The five studies used as a reference for developing this video have an average category worthy of use, so the purpose of this study is to describe the design and to find out the validation results of the development of learning videos for science content on human respiratory system material.

2. Method

Type of research is research and development *(RnD)*. Development research is a method used to produce certain products and test the effectiveness of these products (Sugiyono, 2014). In the ADDIE model, there are steps to solve learning problems that occur in students according to the needs and learning characteristics of students. The development research model used in the science content learning video material of the human respiratory system for grade V students in the ADDIE model has several steps, namely, (1) Analyze, (2) Design, (3) development, (4) Implementation, and (5) Evaluation (Tegeh et al., 2014). The subjects in this study consisted of content or learning material experts, instructional design experts and instructional media experts as well as three fifth grade elementary school students. This activity is carried out to find out complete data so that it can be used to improve the media and determine the validity of the media products produced. The experts who validate the learning video product are lecturers in the department of basic education and educational technology at the Ganesha University of Education. While the subjects in the individual trial were 3 students of grade V SD consisting of 1 high achiever, 1 medium achiever, and 1 low achiever.

The method used to collect data in this study is a questionnaire method. The questionnaire method is a data collection technique that is carried out by giving a set of questions or written statements to respondents to answer (Sugiyono, 2014). The questionnaire is used at the validation stage by subject content experts, instructional design experts, instructional media experts, and at the individual trial stage.

The instrument used to collect data in this study was a questionnaire. This questionnaire was used to collect data from the evaluation of content experts, media experts, design experts, and fifth grade students of SD No. 4 Sibangkaja. The grid for the assessment of the science learning video appraisal content of the human respiratory system material is as follows.

Table 1. Subject Matter Expert Instrument Grid

No	Aspect	Indicator	Item Number	Number of Grains
1	Curriculum	1) Suitability of material with basic competencies	1	3
		2) Suitability of the material with learning indicators	2	
		3) The suitability of the material with the learning objectives	3	
2	Theory	1) Material Truth	4	5
		2) Depth of material	5	
		3) Suitability of material with student characteristics	6	
		4) The material is supported by the right media	7	
		5) The material is easy to understand	8	
3	Grammar	1) Use appropriate and consistent language	9	2
		2) The language used is in accordance with the characteristics of students	10	
Amount				**10**

(Source: Suartama, 2016)

Table 2. Learning Design Expert Instrument Grid

No	Aspect	Indicator	Item Number	Number of Grains
1	Destination	1) Clarity of learning objectives	1	2
		2) Consistency between objectives, materials and evaluation	2	
2	Strategy	1) Delivery of material provides logical steps	3	5
		2) Learning activities can provide a stimulus to students	4	
		3) Provide examples for understanding the concept	5	
		4) Helps remember previous abilities and knowledge	6	
		5) Give students the opportunity to learn individually	7	
3	Evaluation	1) Provide practice questions for understanding the concept	8	3
		2) The questions presented are in accordance with the learning indicators	9	
		3) Clarity of instructions for working on questions	10	
Amount				**10**

(Source: Suartama, 2016)

Table 3. Learning Design Expert Instrument Grid

No	Aspect	Indicator	Item Number	Number of Grains
1	Message Design	1) Text readability	1	10
		2) Use of images and support learning materials	2	
		3) Use of proper font, font size and spacing	3, 4, dan 5	
		4) Composition and color combinations that are right and match	6 dan 7	
		5) Use of proper animation	8	
		6) Support music accompaniment in accordance with material	9	

		7) Use of appropriate narrative	10	
2	Operation	1) Ease of use of media	11	
		2) Media can help students in understanding the material	12	
		3) Media can arouse student motivation in learning	13	5
		4) Students can play back learning video media	14	
		5) The duration of the video that is effective for student learning	15	
Amount				**15**

(Source: Suartama, 2016)

Table 4. Individual Test Instrument Grid

No	Aspect	Indicator	Item Number	Number of Grains
1	Message Desain	1) Opening win of the video	1	
		2) Text readability	2	5
		3) Image clarity	3,4	
		4) Dubbing voice clarity	5	
2	Theory	1) Ease of understanding the content of the material	6,7	3
		2) Clarity of material description	8	
3	Motivation	1) Media gives students enthusiasm for learning	9,10	2
Amount				**10**

(Source: Suartama, 2016)

For the type of data used in this study are qualitative data and quantitative data. Quantitative data were obtained from the results of expert validation in the form of scores from a questionnaire. While qualitative data is data obtained from the results of a questionnaire in the form of input, suggestions and comments. The analysis technique used to process the data is quantitative descriptive analysis. Quantitative descriptive analysis is a way of processing data by systematically arranging data in the form of sentences, words and categories so that general conclusions are found (Agung, 2014). This analysis technique is used to process the results of the validation scores on the questionnaire. To provide a meaning or category of the research conducted, the results of the trial were translated using a scale conversion table of 5, with the following conditions.

Table 5. Conversion Level of Achievement with a Scale of 5

No	Achievement Level (%)	Kualification	Information
1	90 - 100	Very Good	No need to revise
2	75 - 89	Good	Slightly revised
3	65 - 74	Enough Good	Revised as needed
4	55 - 64	Poor	Many things revised
5	0 - 54	Very Poor	Repeated making products

(Source: Tegeh & Kirna, 2013)

3. Result and Discussion

Results

This development research resulted in a learning video of science content material on the human respiratory system for fifth grade elementary school students. This development research resulted in 2 subjects, namely (1) the design of the learning video for science content on the human respiratory system material, and (2) the validity of the learning video for science content on the material for the human respiratory system. This research design uses the ADDIE development model. The ADDIE development model is suitable to be chosen for developing instructional videos or multimedia, because this development model is programmed in a systematic order. Due to this study using ADDIE model of the design so this study consisted of five stages consisting of (1) Analyze, (2) Design, (3) development, (4) Implementation, and (5) Evaluation.

The first stage is analysis. At this stage, a thorough observation is carried out and conducts interviews with the class teacher regarding all problems that occur in the learning process. In general, the

observation and interview activities include 3 stages, namely (a) conducting content analysis, (b) analyzing the characteristics of students, and (c) analyzing the environment and facilities. Through content analysis, it can be determined that the media developed, namely learning videos, is limited to the Class V science lesson content of the human respiratory system material. Analysis of student characteristics was carried out to determine the character of students in the learning process. From the results of interviews and observations with the class V homeroom teacher at SD No. 4 Sibangkaja can be said that learning will be more optimal if it uses the right learning resources. The source of student learning does not only come from teachers and books but in the form of various learning media. In addition, during this pandemic, students easily get bored if learning is not varied. At the stage of environmental and facility analysis that was carried out, at SD No. 4 Sibangkaja already has an LCD projector and *WiFi*. Grade V student at SD No. 4 Sibangkaja, amounting to 29 students, on average already have a cellphone with an Android operating system. From these results, the video learning media is very suitable to be developed because it can be used in the online and offline learning process.

The second stage is design. At this stage the activities carried out are designing the product as outlined in the form of *flowcharts* and *storyboards* as the basis and flow used at the development stage. In addition, the activities carried out at this stage are selecting *software* suitable for developing instructional video media. The software used is *VN (VlogNow*) and *PowerPoint* to design images, create animations, edit video, and edit audio. The third stage is development. At this stage, products that have been designed and designed will be developed into real products based on the *flowcharts* and *storyboards* that have been made. The activity carried out was to collect materials and materials that were obtained from the textbooks of class V Elementary School Theme 2 with material on the human respiratory system. At this stage, video material selection is also carried out, such as images, audio, animation, color combinations, and things related to video aesthetics. The selection of materials and materials will of course be adjusted to the *software* used to develop learning videos, namely *PowerPoint* and *VN (VlogNow)*.

The fourth stage is implementation. At this stage the activities carried out are conducting product trials on the subject, namely students. Before the product is tested, the product is *reviewed* first by material or learning content experts, learning design experts, and instructional media experts to determine its eligibility. The fifth stage is evaluation. In the ADDIE development model, evaluation is carried out at every stage in the development of instructional videos, starting from the analysis stage to the implementation stage. Evaluations are carried out in the form of improvements or revisions based on suggestions, input, comments, and facts found. Evaluation is carried out so that learning video products get better results. The following is the final result of the development of a science content learning video for the human respiratory system in grade V SD which is divided into 3 parts shown in following figures.

Figure 1. The Beginning

Figure 2. The Core

Figure 3. The Last Part

The validity test is carried out to determine the feasibility level of the product being developed. The validity test of the learning video development product is carried out by subject matter content experts, learning design experts, instructional media experts, and individual trials in more detail are presented in table 6.

Table 6. Percentage of Validity Results of Learning Video Development

No	Trial Subjects	Result Of Validity (%)	Information
1	Of Content Subjects	87,5	Good
2	Expert Test of Learning Design	95,0	Very Good
3	Expert Learning Media	95,0	Very Good
4	Test Individual Trials	95,8	Very Good

Based on the results of expert validation and individual trials, the development of learning videos for science content material on the human respiratory system obtained average results with very good qualifications.

Discussion

The result of the *review* from the expert of the content of science subject content obtained 87.5% results with good qualifications. The content of the material contained in the learning video is interesting and easy to understand, because the learning video is made by combining audio visual elements. With the existence of interesting learning media, learning will be more interactive and there will be interactions between teachers and students. This is in line as expressed by previous research that the success of teachers in the teaching process is highly dependent on the interaction between teachers and students (Maulida et al., 2020). Apart from being a source of learning, the teacher is also a facilitator to direct students to achieve learning goals (Pratama et al., 2020). The results of *reviews* from instructional design experts obtained 95.0% results with very good qualifications. The assessment carried out on the learning design refers to the lesson plan (RPP) that was prepared. Before the teacher carries out the learning process the teacher must have thorough preparation for teaching. As professional educators, teachers must have good analytical skills on learning conditions in order to create optimal interactions with students. Therefore, teachers must be able to adapt learning media to the characteristics of students so that learning objectives can be achieved (Supriyanto, 2021). In line as stated by previous research that learning is an interaction between the teacher and students and the teacher has the freedom to regulate or direct the learning process to suit the learning objectives (Prananda et al., 2020).

The results of *reviews* from instructional media experts obtained 95.0% results with very good qualifications. The learning video media developed has an interesting audio-visual element. Learning videos can solve problems related to time and space in the real world by digitizing them (Hafizah, 2020). As currently implemented, learning during the pandemic is very dependent on digital devices to carry out the learning process. In line with this, it is important to do innovation in the learning process to keep up with developments and also to make the learning process creative (Ismailah, 2020). The results of individual trials obtained 98.5% with very good qualifications. The three students at the individual test stage gave a happy impression after using the product. Learning media in the form of video does have its own charm, because video is an amalgamation of audio and visual elements. Videos will also be more interesting if they can be created properly and creatively. The teacher as a facilitator, of course, must

equip themselves with existing developments so that students can be facilitated and students become happy to take part in learning. This is in line as expressed by previous research that fun learning will encourage students to find curiosity in themselves, so that this can be a motivation for students to continue learning (Ismailah, 2020).

4. Conclusion

This development research resulted in a learning video product for science content on the human respiratory system material developed with the ADDIE model. Based on the results of product validation by subject content experts, instructional design experts, instructional media experts, and individual trial stages, it can be stated that this learning video product is suitable for use in the science content of the human respiratory system material.

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