

Developing Learning Video with Addie Model on Science Class For 4th Grade Elementary School Students

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ABSTRACT

This research was conducted based on online learning during covid-19 pandemic. The use of less innovative learning media has an impact to the students' interest and understanding to the learning material. The objective of this research is to develop instructional learning video. This research was limited to the development stage, due to pandemic situation which is impossible to involve a lot of students. This research used research and development design. Therefore, data collection of this research used questionnaire method. The data analysis method used in this research are descriptive qualitative analysis and quantitative descriptive analysis. The result of the research based on the subject content expert, it was found 91.67 percentage and it was qualified as excellent qualification, the review result by learning media expert, it was found 90.00 percentage and it was qualified as excellent qualification, the review result by learning design expert, obtained 100 percentage and it was qualified as excellent qualification, the evaluation results from individual testing showed 93.33 percentage and qualified as excellent qualification, and the last result by the evaluation from the small group testing showed 95.00 percentage and it was qualified as excellent qualification. Based on the review results by experts as well as the results of product testing, it can be concluded that the Learning Video development product is highly eligible to be used as a learning media in the science subject for 4th grade elementary school students

Keywords: *Development, Learning Videos, ADDIE Model, Science Content*

1. INTRODUCTION

Education has highly important role in improving the quality of human resources. Education is used to increase the quality of human resources. For human, education is useful as means and facilities which can directing, developing, and leading human to have better life, and it is not only for one person but it is also for the other people. Therefore, in relation to the development science and technology, education carries out various kinds of reform for the purpose of realizing national education. In the learning process, the interaction between the teacher and students can happened through direct and indirect communication which used media to support the learning process. Hence, one of important component in learning process is learning media. Learning media is something that can be used to convey message to the students, so that it can stimulate students' thought, feeling, attention, and students' interest to learn something [1]. The students who learned by using learning media, they tend to be more interested than the students that only listen to

teacher's explanation [2]. In addition, the current situation of covid-19 pandemic has changed direct learning process at school into online learning as one of the ways to implement social distancing in order to prevent the spread of covid-19 outbreak [3]. The online learning process affects towards the implementation of learning media. So, the learning media that can be utilized by the teacher is online learning media. According to Purwanti [4] online learning media is a form of distance learning media that supported by internet facilities, so both teacher and students are able to communicate. Whats-App group is a common learning media that usually used by the teacher to deliver learning material to the students. The utilize of same learning media in repeatedly can affects students' interest in learning.

The use of various learning media in the learning process is expected to give better learning experiences to the students and have better understanding to learning's material. But, based on observation and interview result

to the 4th grade teacher of SD No. 12 Sedang, it was found that there are a lot of teachers that less utilize online learning media. Lack of exploring various types of online learning media affects the students, they are not able to practice basic science skill and scientific attitudes. This certainly affects students' critical thinking developments ability and it made the students' are not used to think and being scientific. In relation to Kusumayuni [5] less innovative learning media can influence students' interest and students' understanding to the science subject. According to Acesa [6] science learning process could not be obtained through human's thought, but it is produced through observation process or experiment to natural phenomenon that happened in the earth. Hence, the implementation of appropriate learning approach is expected can improve students' understanding particularly to science subject during online learning process. Therefore, the existing gap between the implementation of learning approach and the implementation learning media, it needs solution to solve the problem. So, one of the solutions that can be used is learning video with approach process.

Learning video that develop in this study was distributed through link format and it can be reached through mobile phone or the other digital tools. The learning video that develop by the researcher in this study was used approach process in explaining the learning material and it can help the students to practice their skills in science learning process in which still appropriating to the students' cognitive level. The development learning video is expected to be learning media which can help the students to learn independently and can increase students' interest to learn something. The development of learning video in this study is in line with a study who conducted by Putra [7] that developing learning video with ADDIE model. In addition, the result of the study, it was found that the development learning video was eligible to be used during learning process. The other study that conduct the same thing is a study by Yudianto. The result of study, it was found that learning video was eligible to be used and the learning video was able to provide a whole picture of learning material. However, by developing of learning video in this study, it is expected can be used properly during science learning process.

The gap between the expectation of online learning process is interesting online learning by utilize innovative learning media, can be used independently, and can be used as approach process in science online learning. Hence, it is important to develop learning video in science subject for 4th grade of elementary school students. The purpose of this study are to describe the process of developing learning video and to find the validity of learning video on science class of 4th grade elementary school students based of experts' reviews, test users through individual test and small group test.

2. METHODS

This research is a type of Research and Development (R&D). According to Salim dan Haidir [21] who explained that Research and Development (R&D) is a series of process that used to develop or completing product and can be accounted for. The research model that used in developing video learning media is ADIIE model.

There are several stages in ADDIE model, such as: (1) Analyze. In this stage, the researcher analyzes learning needs, analyze the facilities, and analyze learning materials that related to develop the product, (2) Design. In this stage, the researcher determines the hardware and software that utilize to create the storyboard and flowchart of learning video, design the learning video's component using Microsoft Office Power Point software, compiling learning material using Microsoft Office Power Point software, creating learning video assessment, and arrange the lesson plan (RPP), (3) Development. This stage includes the production of learning video based on the arrangement and final result of the product can be assessed by experts and the students beyond the subject. In order to produce eligible and good quality product, tryout testing was conducted. The tryout testing that used in this study is empirical validity by the experts and the students. The empirical validity of the product was assessed by 1 expert who expert on the learning subject, 1 instructional design expert, and 1 expert in learning media. Meanwhile, the product was tested to the students, and it includes individual testing who involved 3 students and small group testing who involved 9 students from 4 grade SD No. 2 Sedang. (4) Implementation. The implementation was conducted to know students' responses towards the learning media during learning process. The things that needs to be done at this stage is trial the product. However, due to covid-19 pandemic which made it is impossible to conduct an activity which involving a lot of students, so in this study only arrived at development stage. And (5) Evaluation. The evaluation that carried out in this study is a formative evaluation which includes validity testing by the experts and try out testing by students.

Method of data collection in this study used questionnaire method. Questionnaire method is used to analyze students' needs, product validity testing by the experts who expert in subject of learning material, instructional design expert, learning media expert, and product testing. The product was tested to the users through individual testing, small group testing to the students. Data collection instruments used in this study is questionnaire. The instrument of product learning video assessments can be presented as follow:

Table 1. Several Points of Instrument Assessment Content of the Lesson

No.	Aspect	Indicator	Number of Point	Total Point
1.	Curriculum	a. Material suitability with basic competence	1	3
		b. Material suitability with indicator	2	
		c. Material suitability with learning objectives	3	
2.	Material	a. Material suitability with students' characteristics	6	7
		b. Material depth	4	
		c. The material is supported by appropriate media	8	
		d. The material is easy to understand	7	
		e. The material represents real life	9	
		f. Give any sources to learn something	5	
		g. The use of appropriate and consistent language	10	
3.	Evaluation	a. The suitability evaluation with the material	12	2
		b. The suitability degree of difficulties of the question with competency	11	
Total				12

(Source: [8])

Table 2. Several Points of Instruments Assessment Learning Design Expert

No	Aspect	Indicator	Number of point	Total point
1	Objectives	a. The clarity of learning objectives	1	2
		b. The consistency between objectives, material, and evaluation	2	
2	Strategy	a. Systematic delivering the material	5	4
		b. Able to motivate the students	4	
		c. Attract students' interest	3	
		d. Give chance to the students to learn independently	6	
3	Evaluation	a. Give evaluation to test students' understanding	8	2
		b. The questions suitable to learning indicators	7	
Total				8

(Source: [8])

Table 3. Several points of Instruments Assessment Learning Media Expert

No	Aspect	Indicator	Number of points	Total point
1.	Technical	a. The simplicity use the media	1	3
		b. The Media able to help students to understand the material	3	
		c. The Media able to motivate the students	2	
2.	Display	a. The good quality of display	4	2
		b. The display of screen is good and balance	5	
3.	Text	a. The accuracy of font style	8	3
		b. The accuracy of the font size	7	
		c. The accuracy of text space	6	
4.	Picture	a. The use of picture and learning video support learning process	9	2
		b. The suitability between picture and material	10	
Total				10

(Source: [8])

Table 4. Several Points of Instruments Individual and Small Group Testing

No	Aspect	Indicator	Number of point	Total point
1	Display's Design	a. The interest of learning video	2	4
		b. Text legibility	1	
		c. Image clarity	4	
		d. Voice clarity	3	
2	Material	a. The Material easy to be understood	7	3
		b. The clarity of material's description	6	
		c. The Media gives students support to learn	5	
3	Evaluation	a. The clarity of the instructions on using the questions	9	3
		b. The questions are appropriate to the material	10	
		c. The language is easy to be understood	8	
Total				10

(Source: [9])

The questionnaire instruments was arranged by using Likert scale [10] and it can be presented as follow.

Table 5. Likert Scale

No	Score	Qualification
1.	Score 1	Strongly disagree
2.	Score 2	Disagree
3.	Score 3	Agree
4.	Score 4	Strongly agree

(Source: [10])

Analysis technique used in this study is quantitative data analysis. Descriptive quantitative data analysis is a type of quantitative analysis data in which arrange the data systematically in form of number of percentages to get common conclusion [11]. The data result from questionnaire such as validation assessment from content lesson expert, instructional design expert, learning media expert, and the result of questionnaire from the subject of individual testing and small group testing was analyzed using quantitative data analysis.

The result of assessment from the experts and the subject testing will analyze quantitatively using formulas to calculate the percentage of each subject.

$$Persentages = \frac{\sum(\text{corrrect answer} \times \text{weight})}{N \times \text{highest weight}} \times 100\%$$

(Source: [12])

Note:

Σ = Total

N = Total all item of statement

Based on calculation percentage from each item, the data was analyzed in order to make decision towards the quality and suitability of the product. The decision was made based on several criteria such as:

Table 6. The Guideline of Data Conversion using 5 scale

Interval (%)	Qualification	Categorization
90 – 100	Excellent	It does not need revision
75 – 89	Very good	Need a bit revision
65 – 74	Good	Need some revisions
55 – 64	Fair	There are a lot things need to revise
1 – 54	Poor	Make the product from the beginning

(Source: [12])

3. FINDING AND DISCUSSION

This study is developing learning media especially video learning media for science subject to 4th grade Elementary school students. There are two main things of this study such as developing learning video and the result of learning video validity based on review from the experts and the students through individual testing and small group testing.

Developing model used in this study is using ADDIE model with five stages such as Analyze, Design, Development, Implementation, and Evaluation. The limitation in developing learning video was experienced in implementation stage in which it could not be conducted. Therefore, the implementation stage was conducted after the product was eligible and can be used during learning process in order to know the effectiveness of the product. But, due to covid-19 pandemic, the implementation includes sumative evaluation through direct learning process between teacher and students could not be conducted. However, there are several stages in developing learning video, namely:

Analyze stage. In this stage, the researcher analyzes learning needs, analyze the facilities, and analyze learning materials that related to develop the product. It needs learning media that can be used independently and

the students can use the media to improving students' understanding especially about science subject. The characteristics analysis of students' need has been conducted to get information about during online learning process, the students need new and easy to use learning media in order can be used by the students independently and improving students interest using video learning media. The media that used by the teacher during online learning process is, Whats-App Group. Besides, it was found that all of the students has been used mobile phone and other facility such as personal computer to support learning process. Hence, it was support the development of video learning media. Based on observation and interview to the teacher related the students' score during half of semester, it was found that the students have problem in science subject. It was happened because the learning process was implementing lectures method and there is no learning activity for the students.

Second, the design stage (design). At this stage, the researcher did several things that related to product design such as creating a flowchart from E-Book in the form of chart to help the arrangement flow of content from the E-Book, creating storyboards from learning videos on science subject, creating science subject scenario especially Metamorphosis material. The storyboard contains of visual design from the learning video and the outlines of the material in the learning video, arranges an outline the content of the material on the media, design the media, arranges learning activities, and create assessment instruments product. This learning video was developed using several applications and sites such as Microsoft Office Power Point, Filmora, OBS and YouTube.

Third, the development stage (Development). This stage includes E-Book production activity based on the arrangement that has been decided and the final product result from this stage can be assessed by the validator or experts and students as the subject of this study. The production activity of learning video consists of the several following activities: (1) Creating learning video material using Microsoft Office Power Point application based on the design that has been arranged. (2) Collecting images that related to the material in the learning video through the Google website, (3) Recording material in Microsoft Office Power Point using the OBS application to create a video, (4) Dubbing recording (5) Combining video material with dubbing using the Filmora application, (6) Video is saved in MP4 format by adjusting the quality of the video resolution to have clear image. The suitability test of the learning video product was carried out to determine the quality and suitability of the product that has been developed, so that it can be used as a learning media. The suitability of the product is known through assessment process who given by some experts as validators and students as subject of this study.

And the last, the evaluation stage. The last stage in study is evaluating the data that has been collected on the implementation stage. Evaluation activities are carried out during product development process in order to avoid mistakes or errors to the final product. The evaluation was created in the form of a formative evaluation which is used to measure or assess learning products which include expert validation, individual test and small group test.

To find out the suitability of the product, product validation was carried out through assessment stage by some experts include lesson content experts, instructional design expert, and learning design expert. Then, the product was try out to the students through user individual testing and small group testing. The instrument of the product validation is a questionnaire. The content of subject in this study was assessed by lecturers who taught science subjects, learning design and learning media were assessed by qualified lecturers in educational technology. User test or students through individual test involving 3 students and small group test involving 9 students from SD No. 2 Sedang. The results of the validation of learning video products through the assessment by experts (subject content expert, learning design expert, and instructional media expert) and product testing was conducted through user testing and the percentage are as follows.

Table 7. Percentage Assessment Result

No.	Subject Testing	Validity Result	Percentage Qualification
1.	Subject Content Expert	91.67 %	Excellent
2.	Learning Design Expert	100 %	Excellent
3.	Instructional Media Expert	90%	Excellent
4.	Individual Testing	93.33 %	Excellent
5.	Small Group Testing	95.00 %	Excellent

Based on the result of product validity, it was found that subject content expert has 91,67% score and it qualified as excellent, dengan kualifikasi sangat baik, Learning Design Expert has 100% score and it qualified as excellent, instructional media expert has 90% score and it qualified as excellent, individual testing 93,33% score and it qualified as excellent, and small group testing has 95% and it qualified as excellent. Based on the result of validation, it can be concluded that learning is eligible to be used as learning media for science subject on 4th grade elementary school students. During the product testing process, it does not rule out the possibility of revision through some comments and suggestions from the experts and subject testing on this study, and the following comments can be presented as below:

Table 8. Comments and Suggestion from the Experts

No.	Validator	Comments and Suggestion	Revision
1.	Content subject expert	The product is eligible to continue without revision.	-
2.	Instructional design expert	It need real example video, not only pictures.	Add page number on the video
3.	Learning Media Expert	Needs developer identities	Add page to developer identities
		Gratitude at the end of video	Add page to say gratitude
		The presenter's voice is not same and clear	Add voice and music
		It needs movement on the video	Add page for video movement

Tabel 9. Comments from Individual Testing

No.	Comment and Suggestion
1.	The learning video is very interesting
2.	The learning video is so cool
3.	The learning video is good, interesting, and I like it

Tabel 10. Comments from Small Group Testing

No.	Comment and Suggestion
1.	The video is interesting
2.	The material on the video is easy to understand
3.	The video is easy to use

The result from developing learning video on science subject includes cover display at the beginning of the video until at the end cover of the video.



Figure 1. Opening

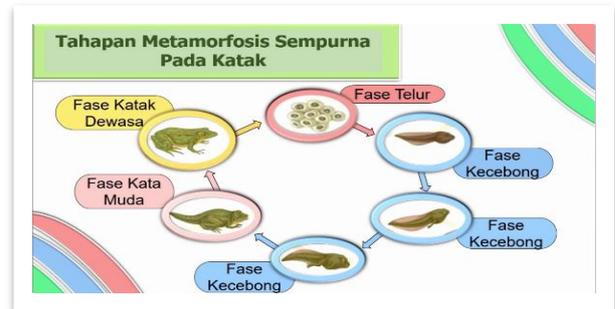
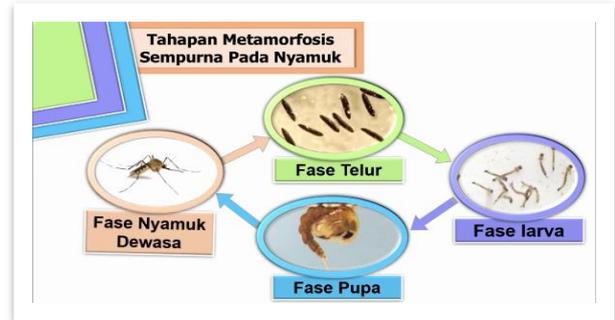
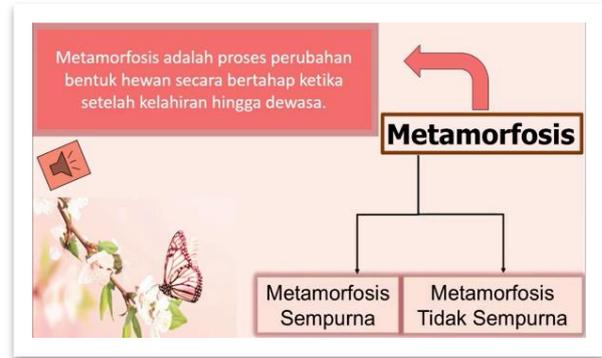


Figure 2. Metamorphosis Material



Figure 3. Developer Profile



Image 4. Gratitude

Based on the results of this study, it is known that the learning video development product is qualified into very good qualification through the results of validation by experts and the subject of this study (students), through individual testing and small group testing, so it can be concluded that learning video is suitable to use as learning media on science subject especially for 4th grade elementary school students. The implementation of the ADDIE development model has an effect on the results of the learning video development, this is because the ADDIE model is arranged programmatically with a systematic sequence of activities in solving learning problems related to learning resources that suitable for students' needs and characteristics [13].

The review result of Learning Video development from subject content expert obtained 91.67% score with score distribution 3 and 4. Based on the results of the assessment from the subject content expert, it is found that the learning Video Learning has excellent qualification. The assessment score of the subject content expert is obtained because the learning material is in the line with the basic competencies, indicators, and learning objectives. Learning material should be relevant to the achievement of competency standards and the achievement of basic competencies which are reflected on the learning objectives Churri [14]. Learning video on science subject can create a lot of students' learning experiences. In addition, through science subject by using learning video can create direct and

meaningful learning experiences that can be applied in daily activities.

The review result of Learning Video development based on learning design expert has gained 100% score and it qualified as excellent qualification with 4 score distribution. Based on the assessment of learning design experts, it is found that the implementation approach process can improve students' activity during learning process. The implementation of approach process is very compatible with constructivist theory and it means that the learning becomes more meaningful [15] because with the implementation of this approach, students are able to see how the process of animal metamorphosis is. Hence, it can be applied in students' daily lives. Putri [16] explains that learning activities are able to develop students' skills to build their own knowledge actively and make learning activity to be meaningful process. Hence, the implementation of approach process with learning video can improve students's learning experiences and student understanding to the material.

The review result of the learning video development product based on the assessment from instructional media expert obtained 90% score and it qualified as excellent qualification. Assessment through a questionnaire with a score distribution 3 and 4. Media qualification is obtained based on the purposes of using media as learning media, students can get messages, and strengthen and expand students' knowledge [17]. Learning Video Products was developed to achieve the objectives of the existence of learning media, which is to make it easier for students to understand the material that being studied [18]. Exploring the use of learning media is necessary, especially during current situation and online learning process is conducted. Learning video product can be used by students through mobile phone. Learning that applies Android-based learning media makes the students happier during learning process because the material is packaged with pictures and videos, and it is flexible, the students can learn anytime and anywhere [19]. Hence, this is become the advantage of Learning Videos on science subject.

The results of this study are supported by a study who conducted by [20], it was found that learning video with the extraction and isolation of secondary metabolite compounds from wild leaves (*Premna serrativeolia* Linn) material is stated as valid, simple, and it is suitable to use in learning process. In addition, this study is also supported by [7], it is found that learning video with the ADDIE model has a good level of validity and it is appropriate to be used during learning process. The implication in developing Learning Videos on science subject also supported by some facilities that owned by school and students, such as personal computer and mobile phone. Utilizing those facilities must be supported by teacher and students' ability in operating

the learning video, so the learning video can be utilize effectively and independently as learning media.

4. CONCLUSION AND SUGGESTION

This study is a development study which implementing ADDIE model (Analyze, Design, Development, Implementation, Evaluation). Based on the results of assessment by experts and subject of this study (students), it can be concluded that Learning Video development product in the science subject for 4th grade elementary school students is “eligible” to be used as learning media.

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