The Development of Learning Media Video Animated Basic Patterns of Practical System Body

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Abstract. The purpose of this research is to develop a practical system body animation video learning media for the basic pattern of the system. This research applied research and development with the ADDIE development model consisting of analysis, design, development, implementation, and evaluation. The validation was done by material experts and learning media experts, while the test subjects were students and teachers. The instrument used was a questionnaire and analyzed descriptively. The results of the study were as follows: learning material experts with a score of 96.5, learning media experts with a score of 96.67, student trials with a score of 95.56, and teacher trials with a score of 92 were included in the very good category so that the basic system animation video learning media was practically feasible to use in learning pattern making at SMK Negeri 2 Singaraja and students can further improve their learning outcomes and learn independently.

Keywords: animated videos, learning media, pattern making, practical system

1 Introduction

The teaching and learning process is an important element in ensuring students can follow the subject matter that will be delivered. Learning is a purposeful activity. This goal must be in line with the learning objectives, students, and curriculum[1]. To attract students' interest and increase the level of students' academic achievement, the learning process must be fun and able to challenge students' thinking [2]. Quality learning is not only based on theory and curriculum but also involves elements that must be considered in it [3]. The first thing that must be considered in this learning is the availability of qualified educators who can condition learning well. The second is the readiness of students to accept learning. And the third is the availability of infrastructure used as learning media [1].

Learning media is a tool and material used for educational purposes [4]. The selection of media and learning resources was based on the analysis of objectives, analysis of student characteristics, and analysis of tasks. The success of learning is highly dependent on the use of learning resources or selected learning media [5]. Teachers must be able to choose the right media as a learning resource according to the learning objectives, student characteristics, and the right to support the delivery of material in the form of facts, concepts, principles, or generalizations [6]. One of the main functions of teaching media is a teaching aid that also

influences the teacher's climate, conditions, and environment [7]. Media functions for learning purposes, where the information contained in the media must involve students both in the form of real activities so that learning can occur. The material must be designed more systematically and psychologically in terms of learning principles to prepare effective instructions. Learning media must be able to provide a pleasant experience and meet the individual needs of students because each student has different abilities [8]. Learning media is a messenger technology that can be used for learning purposes in supporting the success of the teaching and learning process [9]. Learning media is everything that is used in learning activities to stimulate students' thoughts, feelings, interests, and attention so that the process of educational communication interaction between teachers and students can take place effectively and efficiently. The role of media in learning is very important because learning media can clarify the presentation of information messages that can facilitate the learning process and learning outcomes [10]. This means that learning media can be used as intermediaries to explain learning materials. Good and adequate use of media is expected to stimulate students' thoughts, feelings, concerns, and interests so that the learning process can run well and be exciting.

The results of preliminary observations made on learning pattern-making subjects in delivering material in class showed that teachers usually used projected slides with focus and explained the points. The media used in learning was still minimal, limited on modules and textbooks, so students had difficulty understanding the material presented and could not study independently because this pattern-making subject was material that is more practical in making various kinds of material. The basic pattern and pattern analysis according to the fashion model. Due to the lack of learning media used, the learning process could not run smoothly, and the message conveyed by the teacher could not be received by students. The existence of the covid-19 pandemic causes learning to be carried out online, causing learning cannot run well. Many students have difficulty in the learning process by using existing modules so that student learning outcomes decrease. Of the 29 students of class X Fashion Design at SMK Negeri 2 Singaraja, more than 50% of the score was below the maximum completeness criteria in the pattern Making subject. The final goal to be achieved from the pattern-making subject was that students have competence in both knowledge and skills in designing, developing, managing, reviewing, and developing pattern making. This follows the characteristics of Vocational High School students who must be able in all fields, whose aim is to prepare themselves for the industrial world or the world of work and enter the era of the free market, which is increasingly modern and also with growing innovations.

Based on these problems, the researchers developed an animated video learning media to support the teaching and learning process at SMK Negeri 2 Singaraja, Department of Clothing, especially in the subject of pattern making. The development of digital media is growing rapidly in a very dynamic space [11]. Learning media in the form of animated videos can be used in learning pattern-making subjects because there are adequate facilities and infrastructure such as LCDs, computers, or laptops as well as convenience for teachers in operating animated video media. Animated video media can also be used by students who study independently at home because the learning process is still carried out boldly. The animated video media developed was expected to complement the existing learning media.

Learning materials made into visualization in the form of animated images are more meaningful and interesting, easier to accept, understand, more motivating [12]. Student learning outcomes using cooperative learning integrated with computer animation media were significantly better

[13]. Video animation learning methods should be attractive, large enough to look at, and have colorful designs. This strategy can improve students' reading comprehension and vocabulary mastery [14]. Some research results show that using animated video learning media can generate motivation, creativity, and enthusiasm for student learning to achieve satisfactory learning outcomes. Animated digital learning media makes it easier for teachers to convey material for making fashion patterns so that students will understand more quickly and easily attract students' interest in learning. Animated video learning media contains elements of dynamic images, colors, music, and text so that students become interested, motivated, and enthusiastic in learning. With the interest, interest, motivation, and enthusiasm for learning in students by using animated video learning media, students will become confident in doing tasks so that it affects student learning outcomes and learning independence in pattern-making subjects. The use of this animated digital learning media makes learning active, creative, effective, and fun [15]. Video provides a more flexible medium to support student learning activities, can explain concepts related to mechanisms or processes, also can be repeated and stopped according to student needs [16]. Learning media in the form of videos to allow students to see visually and hear video is effective for training students' spatial abilities [17].

This study aims to produce learning media products with animated videos on pattern-making subjects that are validated by media and material experts and groups of students.

2 Research method

This type of research was Research and Development. Development research is a research method used to produce certain products and examines the effectiveness of these products [18]. The development method used in this research was the ADDIE model, a learning design based on a systems approach. The steps for the ADDIE development method are: analyze, design, develop, implement, evaluate. The ADDIE model design can be seen in **Figure 1**.

Fig. 1. ADDIE model research steps (source: matrin and betrus [19]).

The research steps were as follows: 1) Analysis, a step used to determine the atmosphere and conditions in the field or to analyse needs. Needs analysis is the initial stage for developers to develop needs analysis through two things, namely: class observation and interviews. 2) Design.

At the design stage, the steps were as follows: a) determining and collecting data related to the implementation of the development of animated videos, including subject matter and specific learning objectives. 3) Creating an animated video design. The development was carried out at this stage, including collecting various kinds of material to be used as manufacturing guidelines in the development process. 4) Development by making an animated video according to the design made, the steps were as follows: a) Introduction. The introduction included opening and introductory shows. b) Core activities containing a complete description of the material such as examples, simulations, demonstrations, or demonstrations. c) Closing, contained conclusions or summaries as well as further activities from the animated video presentation that students must do. At the development stage, material expert validation was also carried out by learning material experts and learning media experts. Expert validation was carried out to test the theoretical validity, presentation, and evaluation. Theoretical validation trials (material/content) were carried out by material experts in the field of pattern making. Meanwhile, learning media experts carried out media validation (language, legibility, and graphics). 4) Implementation, the implementation of learning was carried out in class X fashion at SMK N 2 Singaraja. The trial activity was carried out to determine whether this animated video learning media product was valid to be used as one of the media that could be used in learning activities. 5) Evaluation. At this stage, the evaluation was used to revise input from learning material experts, learning media experts, and users.

The variable in this research was the development of an animation video of pattern making. The research subjects consisted of 1) material experts in the field of fashion as many as two people, and 2) two learning media experts. The subjects at the trial stage were six students of class X SMK N 2 Singaraja and two teachers.

Data collection techniques used interview techniques to find data on the identification of needs for learning media development. The observation technique was used to find data needs analysis. The questionnaire technique was used to find out the results of the validation of the media developed and carried out by material content experts and learning media experts. The questionnaire technique was also used to find data on users' feasibility of learning media, namely teachers and students. Instrument indicators can be seen in Table 1.

Table 1. Research Indicators of Animated Video Learning Media

Assessment Aspect	Indicator
Content	Relevance of the material to the syllabus
	Material quality
	Learning design
	Aspects of language and typography
Learning Media	Functions and benefits
	Visual aspects of media
	Aspects of language and typography
	Programming aspects
Implementation Power and Teacher Response	Ease of Use
	Media Attraction
	Media Use
	Effectiveness
Student Response	Understanding
	Interest

Assessment Aspect	Indicator
	Activity
	Interesting

The instrument used was a questionnaire to determine the feasibility of animated videos seen from the feasibility of the content of the video material and the feasibility of learning media, also the response from animation video users, namely teachers and students. Before the instrument was used in the study, the instrument was tested both in terms of content and empirically. The purpose of testing this instrument was to get an empirical description of the instrument quality that has been made. A validity test is a test to test the accuracy in using a measuring instrument and to see whether the measuring instrument or instrument used can measure carefully or not, if the instrument is used twice to measure the same symptoms the results obtained are consistent, then the instrument can be said reliable. The initial procedure for validating the research instrument was carried out by determining the validation of the content of the concept mastery test and the validation of Gregory's test items. To determine the content validation coefficient, the results of the assessments from the two experts were entered into a 2 X 2-cross tabulation. After the items were validated by two raters, they were analyzed using the calculation according to Gregory as follows.

Content validation calculations by two experts use the Construct Validation formula as follows:

$$Vc = \frac{D}{A+B+C+D} \tag{1}$$

Content validation criteria:
    0.80 – 1.00 : very high content validation
    0.60 – 0.78 : high content validation
    0.40 – 0.59 : medium content validation
    0.20 – 0.39 : low validation
    0.00 – 0.19 : very low validation

Based on the results of the instrument test with calculations according to Gregory, the following results were obtained: 1) The learning material content test questionnaire with 18 items of instruments were all relevant. So that the results of Gregory's calculations obtained content validation 1, it means that the item had very high content validation. 2) The learning video media test questionnaire totaled 18 items, and all of them were relevant. From the results of Gregory's calculations, content validation 1 means that the item had very high content validation. 3) The user (teacher) response questionnaire consisted of 5 items, all of which were relevant. Thus, from the results of Gregory's calculation, content validation 1 means that the item had very high content validation. 4) There were 13 student response questionnaires. Based on Gregory's calculations, content validation 1 means that the items had very high content validation.

Furthermore, the data obtained were analyzed using descriptive statistical analysis, which analyzes the data by describing or describing the data that has been collected. Content validation was obtained through material experts, while media validation was obtained through learning media experts. The assessment of the results of the material expert test, learning media test, student and teacher testing were calculated by the formula:

$$\text{Percentage} = \frac{acquisition\ score}{max\ score} \text{x } 100 \tag{2}$$

3 Research results

The development method used in this research was the ADDIE model, a learning design based on a systems approach. The steps for developing learning media for animated video learning archetypes of practical system bodies using the ADDIE development method were analyzed, designed, developed, implemented, evaluated. The exposure for the stages of developing the ADDIE model is as follows:

3.1 Analysis

At this stage, several steps were done, namely; (1) determining the subjects that were the object of development. The subjects used as objects of development were the subjects of pattern making in the Department of Clothing for class X SMK Negeri 2 Singaraja, (2) Analyzing the curriculum, namely analyzing the syllabus, lesson plans, and determining the basic competencies to be developed. Syllabus analysis, covering core competencies, basic competencies, indicators of competency achievement, and subject matter. The curriculum analysis stage was carried out by reviewing the applicable curriculum. Analyzed material and collected material. The collection of materials to be used was obtained from learning modules, reference books, worksheets, and handouts, (3) The formulation of learning objectives for which the learning media was developed. The learning objectives and competencies to be taught need to be formulated first. This was done so that researchers could limit the research so as not to deviate from the original goal. The formulation of objectives was divided into two aspects, namely the objectives in terms of the media aspect and terms of the learning objectives. (4) Specification of media requirements. After determining the object of development, it was continued by analyzing the needs. Based on the results of interviews with teachers teaching pattern-making subjects and students who have followed pattern-making subjects. Up to now, there are no teaching materials in the form of videos that are used in learning, teachers and students only use the fashion pattern module in schools and also experience in practice. The existing modules are complete, but students have difficulty learning these modules because currently, students are studying from home online, due to the Covid-19 virus outbreak. Based on the results of observations and interviews, students and teachers need teaching materials in the form of learning videos to support the learning process. Therefore, learning media was developed in the form of animated videos of making basic patterns accompanied by supporting materials and the stages of making patterns in animation.

3.2 Design

In this phase, the animated video learning media design had the following stages: (1) Determined and collected data related to the implementation of video media development, including subject matter and specific learning objectives. The subject matter was obtained from the syllabus, lesson plans, and modules. At the same time, the specific learning objectives were obtained from the competency standards contained in the pattern-making subject syllabus. The

subject matter obtained from the syllabus consists of body size, tools and materials for making patterns, and making practical body patterns. (2) Create an animated video design. At this stage, the development was carried out, collecting various kinds of material to be used as manufacturing guidelines in the development process, which consisted of: (a) material design, (b) flowchart, (c) storyboard making, (d) script preparation, (e) drawing, animation, (f) background, audio, video, (g) display design, (h) media character design, (i) animation video design, (j) dubbing, (k) interactive learning media.

3.3 Development

This stage developed an animated video according to the design made. The steps were as follows: (1) Introduction. The introduction included opening and introductory presentations. Opening shows were needed to attract interest and motivate students to be interested in learning further material. While the introduction contains the title and learning objectives and how it relates to other materials.

Fig. 2. Opening activities.

(2) Core activities. Core activities contained a complete description of the material, such as complete with a description of the meaning of the pattern, examples of pattern-making tools, sizes used, steps to make basic patterns. The quantity of time available during the animation video takes place more in the core activities.

Fig. 3. Core activities.

(3) Closing. Closing activities contained conclusions or summaries, and also follow-up activities from the presentation of animated videos that must be carried out by students.

Fig. 4. Closing activities.

After completing the process of developing animated video learning media, product validation was carried out by material experts and learning media experts. Expert validation was conducted to test the theoretical validity, presentation, and evaluation. The theoretical validation trial (material/content) was carried out by material experts in the field of pattern making. Meanwhile, media validation (language, legibility, and graphics) was carried out by learning media experts. The results of the validation of material experts and media experts can be seen in Table 2.

Table 2. Validation results of material experts and learning media experts.

Expert	Value	Category
Material Expert	96,5	Very good
Media Expert	96,67	Very good

The results of the validation by two material experts were that they got a score of 96.5 with a very good category, and the pattern-making animation video learning media can already be used in learning with not too many revisions. While the results of the validation of two learning media experts were getting a score of 96.67 with a very good category, and the pattern-making animation video learning media could already be used in learning with not too many revisions.

The evaluation at the development stage was done by making improvements following the input provided by material experts and learning media experts. The evaluations carried out were as

follows: displaying information in making basic patterns, correcting too-long sentences, and clarifying the video volume, fixing the early part of the video that was too bookish by showing only the important points. Adding credits at the end of the film to convey who played a role in making the video, the source of the material, and thanks.

3.4 Implementation

At this stage, the learning media had been declared valid by material experts and media experts tested on users, namely teachers and students. The limited trial was carried out by six students who had different abilities in terms of academics, consisting of two students with high abilities, two students with moderate abilities, and two people with low abilities. After the pattern-making animation video learning media was tested, students were given a questionnaire in the form of a practicality sheet. The purpose of the practicality test was to determine the level of ease or usability of animated video learning media for use by students. Learning media was said to be practical if the results of practical research reached a good category by predetermined criteria. If the results were not practical, improvements would be made according to the suggestions from the respondents. The trial implementation of animated video learning media was carried out in class X of the Fashion Design Expertise Program at SMK N 2 Singaraja. The trial activity was carried out to determine whether this animated video learning media product was valid to be used as one of the media that could be used in learning activities. The results of student and teacher trials can be seen in Table 3.

Table 3. Student and teacher trial results.

Expert	Value	Category
Student	95,56	Very good
Teacher	92,00	Very good

The results obtained from the test results on six students were scored 95.56 in the very good category. This means that students could use animation video media for pattern making well. The animated video learning media was tested on teachers teaching pattern-making subjects at SMK Negeri 2 Singaraja. The results of the trial on two teachers got 92 results in the very good category. The animated video learning media developed was suitable for use in students of SMK Negeri 2 Singaraja.

The evaluation carried out at the implementation stage aimed to improve the animation video in terms of volume so it would be clear from the beginning, middle, and end of the video. The material at the beginning was too much, so that only bullet points must be made.

3.5 Evaluation

Evaluation of the development of animated video media was carried out at each development step, namely the analysis, planning, development, and implementation stages. Improvements were made after receiving input in the form of suggestions and comments from validators of learning material experts, learning media experts, teachers, and students.

4 Discussion

Based on the results of the development, it can be seen that the animation video learning media product for making the basic pattern of a practical system body developed with the ADDIE model consisted of analysis, design, development, implementation, and evaluation. The product developed was said to be feasible and could be used in the teaching process in the classroom. The process of developing animated video learning media through several stages of development and validation from experts to obtain animated video learning media products that were categorized as very good and feasible. The stages in the ADDIE model were suitable to be applied in the development of teaching materials based on problem-solving abilities [20]. The development with the ADDIE model produced teaching materials that have categories in terms of material/content, language, and presentation, and media [21].

The development process went through several stages of testing: testing of learning material experts and trial learning media experts by users, namely teachers and students. The test results obtained very good results, so that the animated video learning media developed with the ADDIE model was suitable for use in the pattern-making learning process at SMK Negeri 2 Singaraja. The media was stated to be applicable in the learning process, as evidenced by the student response questionnaire sheets results at the trial stage of using the product. On the questionnaire sheet, several aspects of the assessment were given, including the aspects of appearance, presentation of material, benefits, and ease of use [22].

Product assessment of animated video learning materials consists of several indicators of assessment of learning materials in the form of; relevance of the material to the syllabus, material quality, learning design, language, and typography aspects. The assessment of learning media consists of several assessment indicators in the form of; functions and benefits, visual aspects of media, audio aspects of media, language and typography aspects, and programming aspects. The product assessment by users, namely teachers and students, consists of the effectiveness of using videos, video attractiveness, the practicality of use, video display, and video duration. Sukiman stated that to produce video learning media that can increase motivation and effectiveness of its use, the development of video media needs to pay attention to the following characteristics: a) Video is capable of enlarging small/too small objects that cannot be less visible to the naked eye, b) Video is capable of manipulating the image display according to the demands of the message to be conveyed. c) Video can make an object into a still picture, meaning that the object can be stored for a certain duration, in silence, d) The attractiveness of the video is that it can keep students' attention longer for up to 1-2 hours to listen to the video compared to just listening which only lasts 25-24 hours. 30 minutes [23]. Video is capable of displaying the most recent, warm, current, or current image objects and information [20]. Agreeing with Andjani's research results, the existence of animated video learning media can provide convenience for educators, where they can replay videos if students do not understand the material. In addition, it has a good impact on students, namely learning outcomes, learning motivation, and not getting bored easily because of different learning. The learning media of animated video material has the effect of increasing students' motivation and memory and is effective for teaching and learning activities [24].

The development of quality, innovative, and applicable learning media is a demand in this modern era. Therefore, educators are expected to have the ability to utilize modern technology

as a medium in assisting the teaching and learning process and improving the quality of learning. Learning using two-dimensional animated video media is proven to increase the attractiveness of students [25]. The results of the study [26] stated that the animated video learning media got a fairly high feasibility test value through expert validation tests, so that it got a very feasible category. This illustrates that animated video learning media can be used in learning activities. It is expected that students can be more enthusiastic about learning. Teachers can also be more creative and innovative to create learning media that can provide lessons and enthusiasm for students [27]. The existence of media that can display images and sound can help students divert their boredom and will be more interested in participating in learning that uses multimedia than just the following learning through lectures that the teacher does when teaching [28]. The development of form image learning media through animated videos are needed to improve students' understanding and skills when conditions do not allow for direct learning activities [29]. The development of animated video media to increase students' learning motivation and hard work character has been tested for its feasibility and effectiveness. It is expected that teachers use animated video media as an alternative for learning, and similar animated video media can be further developed for different materials [30]. There is an effect of using learning videos on learning outcomes [31]. There is an increase in student learning outcomes from the test, the first, and the second. Students respond enthusiastically, then actively present their work by taking turns, listening, and listening to the material given by the lecturer through video [32].

Learning outcomes using animated digital learning media that have high self-confidence are higher [15]. The results of the product development of learning media in the form of animated videos are expected to provide benefits for students in practicing their spatial skills in the process of activities both inside and outside the classroom [17].

5 Conclusion

The development of animated video learning media applied the ADDIE model, which consists of five steps, namely: analyse, design, develop, implement, evaluate.

The validation of the animated video learning media was carried out by material experts and learning media experts. The results of the validation test by the material expert were 96.5 in the very good category, while the validation test results from the learning media experts scored 98.34 in the good category. The pattern-making animation video learning media can already be used in learning with not too many revisions.

User trials were conducted by teachers and students of SMK Negeri 2 Singaraja. The results of the trial by the teaching teacher got a score of 92 in the very good category, and the small group trial conducted by the students got a score of 95.56 in the very good category. Thus, it can be concluded that the animated video media developed was easy to understand by students, so it was suitable for use as learning media in pattern-making subjects.

This research was limited to small group trials. No large group trials have been conducted, thus further research is needed by conducting product trials on comparison classes (experimental research) to determine the level of effectiveness of the products that have been developed, as well as developing animated videos with different subjects. Therefore, students can easily understand the material, especially when learning online.

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