Development of innovative learning media based on video applications in the introduction to the usage of sewing tools course for fashion students in the state university of malang

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Abstract.
The media make it easier for students and lecturers in the student-centered online teaching and learning process, in sewing equipment courses. it is necessary to develop learning media based on video tutorials for operating high speed sewing machines to facilitate online learning. The purpose of this research is to develop three applicable video tutorial products (VTA) namely (overlock sewing machine operation, overdeck sewing machine operation, and buttonhole machine operation). The method used is the ADDIE learning media development model. The results from expert's validation related to media 73.8%, related to material category 96. 8%, and feasible category 89.01%.. The discussion of applicative video tutorials for the operation of overlock sewing machines, overdeck sewing machines, and buttonhole machines begins with the initial display/opening, presentation of sewing machine operation material, ends with assignments/practice. Video displays are made to facilitate and improve students' understanding and motivation in learning. This is because video is one of the efforts to increase understanding and interest in learning for students, which is a technology for capturing, recording, processing, transmitting and rearranging moving images, which are related to vision. and hearing, so that the video is suitable to be used for learning the introduction/use of sewing machines in sewing equipment courses.

1. Introduction

Learning media facilitates students and lecturers in the teaching and learning process. Edu interactive is learning that emphasizes student-centred learning. In the online teaching and learning process, student-centred learning media help students understand the material, especially practical learning. One of the suitable media for practicum learning is interactive media in Applied Video Tutorials (VTA). During the Covid-19 pandemic, the existence of video tutorials is a crucial requirement. That must be owned. So far, teachers still use media from YouTube, which is sometimes insufficient to cover the competences demanded.

Practical courses, especially sewing equipment courses, require interactive media in video tutorials to quickly understand the learning materials. Besides, it is necessary to reduce errors in operating industrial sewing machines, such as 1) operating a high-speed straight stick machine, 2) operating an overdeck machine, 3) operating an overlock machine, 4) operating a *neci* machine, 5) operating a buttonhole machine, and 6) operating a button-down machine. Therefore, several video tutorials on operating an overlock, overdeck, and buttonhole machine were needed.

Based on this background, it is necessary to develop a learning media based on applicable video tutorials to operate high-speed sewing machines to facilitate online learning. Video tutorials were chosen because research showed a significant effect from using video-based media on learning outcomes in geography learning [1]. Similar research also stated that using video increased the scores than learning without video [2]. The material validation obtained an average of 94.2% percentage feasibility, and the multimedia validation earned 80.6%. The tests concluded that based on the legal feasibility of developing multimedia

instructional videos, this research's media fell into the category of fit for use [3]. Video is an interactive media that display sound and motion. In the teaching and learning process, video media has many benefits, including a substitute for the natural environment and showing objects that generally cannot be seen by students, describing a process accurately and can be viewed repeatedly. Videos also encourage and increase students' motivation to keep seeing them [4].

Meanwhile, various types of learning media, according to Seels and Glasgow [5], there are various learning media, which can be grouped into : traditional media, namely projected silent visuals (slides/powerpoints, film strips). Some of these traditional media are still used in the Sewing Tools course, so it is necessary to update them. Kustandi [6] revealed that video is a tool to present information, explain processes, explain complex concepts, teach skills, shorten or slow down time and influence attitudes. Daryanto [7] revealed that video media allows audio signals to be combined with sequential moving images. HB Uno [8] suggested that the advantages of video media are a) manipulate time and space so that students can be invited to travel anywhere even though they are in the classrooms, b) display objects that are too small, too big, dangerous, or even impossible for students to visit, c) reliable to learn motor skills and train active skills.

The advantages of using video media in learning are: a) complement the actual experiences of students when they discuss, read, and practice, b) show everyday objects that cannot be seen, such as the heart's work when it beats, c) encourage and increase student motivation and instil attitudes and other affective aspects, d) contain positive values to invite thinking and discussion in groups students, c) present events to large groups or small groups and heterogeneous groups or individuals [6]. Meanwhile, the advantages of videos, according to Rusman [9], are a) provide messages to be received more evenly by students, b) perfect for explaining a process, c) overcome the limitations of space and time, are more realistic and can be repeated or stopped as needed, and d) gives a deep impression and affecting students' attitudes. Audio-visual/video-based teaching materials is an effort to increase students' understanding and interest in learning because the video is a technology for capturing, recording, processing, transmitting, and rearranging moving images, usually using celluloid film, electronic signals, or digital media and relating to sight and hearing [10]. However, videos also have weaknesses, such as: generally requires expensive costs and a lot of time. When playing video, images and sound will continue to not all students can follow the information they want through the video [6].

In a teaching and learning process, two very important elements are teaching methods and teaching media. Nevertheless, it can be said that one of the main functions of teaching media is as a teaching aid that also influences the climate, conditions, and learning environment arranged and created by the teacher. Efforts to improve the teaching and learning process is to utilize information and communication technology. Video-based teaching material is an effort to increase students' understanding and interest in learning [11]. Kind of Learning Media, according to Seels and Glasgow [5], are grouped into traditional media, namely projected silent visuals (slides/powerpoints, filmstrips, etc.), non-projected visuals (images, posters, photos, charts, graphs, diagrams, info boards, exhibitions), audio (recorded discs, cassette tapes), multimedia presentation (slides plus sound), projected dynamic visuals (film, tv, video), print (textbooks, modules, scientific magazines, handouts), games (simulations), realia (models) cutting- edge technology media, telecommunications-based media (teleconferences, distance lectures), microprocessor-based media (computer games, hypermedia, CDs, Computer Assisted Instructional, hypertext). The criteria for selecting learning media are a) practicality, the media is available, the procurement and maintenance costs are not expensive, efficient, and the teacher quickly understands it; b) compatibility with students (student appropriateness), the media must follow the level of development and experience of students; and c) compatibility with learning (instructional appropriateness), the selected media must follow the planned learning strategy [12]. In this study, researchers chose video tutorials as product outputs to facilitate students' learning and could be repeated. The purpose of this research was to develop three applicable video tutorial products (VTA): to operate the overlock sewing machines, overdeck sewing machines, and buttonhole machines

2. Methodology

This research includes development research that uses the ADDIE (Analysis-Design-Development-Implementation-Evaluation) model. The products developed in this research are the making of three applicative video tutorials: a) the operation of the overlock sewing machine, b) the operation of the overdeck

sewing machine, and c) the operation of the buttonhole machine for introduction to high speed sewing machines. The model used in the development of this media is a procedural model. The procedural model is a descriptive model, which outlines the steps that must be followed to produce a product. The experimental subjects in this study were students of fashion design. The data collected from the questionnaires of media experts, material experts, and students are qualitative data.

Data collection in the study was carried out by several techniques as follows: a. Documentation techniques are carried out during the research phase from the potential and problem analysis phase until the product has been developed. b. Questionnaire technique to measure the feasibility of content/material and media. Questionnaires were given to material experts, media experts, and students according to their needs and objectives. The validity of the instrument used is the validity of the questionnaire items, which are carried out by material experts and media experts. Then to test the feasibility of the questionnaire items carried out by conducting field tests to students.
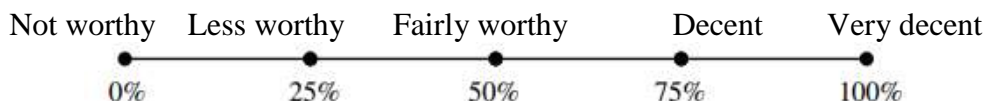
The data analysis technique used in this research is descriptive qualitative analysis, namely by describing and interpreting qualitative data. Questionnaire data based on questionnaires need to be calculated so that they can be presented qualitatively. The steps taken are as follows:

a. Questionnaires that have been filled out by respondents, checked for completeness of answers, then arranged according to the respondent's code.

b. Quantifying the answers to each question by giving a score according to a predetermined weight.

c. Create data tabulation. d. Calculate the percentage of the components of the questionnaire with the following formula: P (k) = S/N x 100% Information: P(v) = percentage of components S = total score of research components N = total maximum score e. From the percentage that has been obtained, it is then transformed into intervals as shown in the following figure:

Validation Result Interval

Invalid	Less valid	Sufficiently valid	Valid	Very valid
0%	25%	50%	75%	100%
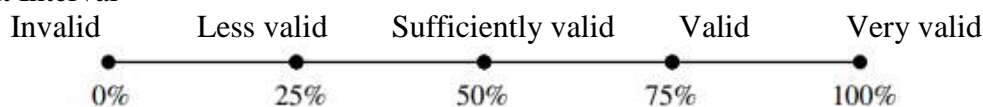
Field Test Result Interval

Not worthy	Less worthy	Fairly worthy	Decent	Very decent
0%	25%	50%	75%	100%

3. Research Results

Development of applicable learning media on introducing industrial sewing tools course on operating overlock sewing machines, overdeck sewing machines, and buttonhole sewing machines, consisting of the production stages, changing product designs of scripts into a program containing text, sound, images, and animation. The video was then tested for validation by media and learning experts to ensure whether the design was easy to implement and understand or not so that it could be revised immediately. Material expert reviewers come from fashion design lecturers, while media expert reviewers come from media practitioners. Aspects that were reviewed/evaluated included format and content. Data were collected through non-test techniques with validation sheet instruments of closed and open questionnaires intended for material experts and media experts. The data analysis technique used quantitative descriptive analysis techniques.

Data analysis began by examining all available data from the validation test results of media experts and material experts. The quantitative data was obtained from a validator assessment questionnaire of media experts and material experts and field tests to 24 Fashion Education students who had taken sewing equipment courses. After the product was validated, it was revised based on suggestions and input from experts. The media validation fell into the valid category of 73.8%, as shown in the following table:

Table 1. Media Expert Validation Result Data

No	Indicator	Score		
		Video 1 Score	Video 2 Score	Video 3 Score
1	Image and animation settings on media/video displays suitability	3	3	3
2	Background selection compatibility	3	3	3
3	Accompaniment music and narration on media/video display compatibility	2	2	2
4	The selection of the size and color of the text suitability	3	2	3
5	Color harmony, text, and images on the video	3	3	3
6	The attractiveness of serving images and animations	4	4	4
7	Ease of using media/video	3	3	3
	Total score	21	20	21
	Percentage of each video	21÷28=75%	20÷28=71.4%	21÷28=75%
	Percentage of overall videos	62÷84=73.8%		

The results of the validation of material experts are included in the very valid category of 96. 8%, as shown in the following table:

Table 2. Material Expert Validation Results Data

No	Indicator	Evaluation		
		Video 1 Score	Video 2 Score	Video 3 Score
1	The accuracy of the title with the material	4	4	4
2	Clarity of presentation of material	4	4	4
3	Ease of material to understand	3	3	3
4	Compatibility between video shows and material	4	4	4
5	Easy to understand language	4	4	4
6	Easy to understand video viewing	4	4	4
7	Material collapse	4	4	4
8	There are assignments/practices	4	4	3
	Total score	**31**	**31**	**31**
	Percentage of each video	$\frac{31}{32} = 96,8\%$	$\frac{31}{32} = 96,8\%$	$\frac{31}{32} = 96,8\%$
	Percentage of overall videos	$\frac{93}{96} = 96,8\%$		

The feasibility test resulted in a very feasible category of 89.01%, as shown in the following table.

Table 3. Field Test Results Data from 24 Respondents

No	Indicator	Score		
		Video 1 Score	Video 2 Score	Video 3 Score
1	Image and animation settings on media/video displays suitability	85	90	85
2	Messages/materials are easy to understand	86	87	85
3	Students received the material well	86	89	86
4	Voice and narration clarity following the text/image presented	87	90	83
5	Language understanding	85	92	81
6	Font size (font) and text color suitability	84	92	83
7	Images and animations attractiveness	81	94	88
8	Easy to utilize media/video	85	93	89
	Total score	679	692	680
	Percentage of each video	679÷768=88.4%	692÷768=90.1%	680÷768=88.5%
	Percentage of overall videos	2051÷2304=89.01%		

4. Discussion

Based on validation data from media and material experts and field tests, this study received valid and feasible categories because the material was easy to understand. Nugroho [11] stated that improving the teaching and learning process utilizes information and communication technology. Video-based teaching materials is an effort to increase students' understanding and interest in learning.

Applicable video tutorials for the operation of overlock sewing machines, overdeck sewing machines, and buttonhole machines began with the initial display/opening, presentation of sewing machine operation material and ended with assignments/practices. The video was made to facilitate and improve students' understanding and motivation in learning. Rusman [9] stated that videos provide messages that can be received more evenly by students. Besides, videos are perfect for explaining a process and overcoming the limitations of space and time, are more realistic and can be repeated or stopped as needed, and give a deep impression that affects students' attitudes. Video is a technology for capturing, recording, processing, transmitting and rearranging moving images, usually using celluloid film, electronic signals, or digital media related to vision and hearing [10].

These videos could be packed as a digital versatile disk (DVD), digital storage (flash disk), and online. The overall display product design was made as simple as possible, with a contrasting color combination between the background, text, and the presentation was easy to understand. Making learning videos that increase motivation and effectiveness need to pay attention to the characteristics and criteria. Reiser and Dick [12] informed the criteria for selecting instructional media: a) practicality, the media is available, procurement and maintenance costs are not expensive, efficient, and easy to understand by teachers, b) suitability with students (student appropriateness), the media must follow the level of development and experience of students, and c) compatibility with learning (instructional appropriateness), the selected media must follow the planned learning strategy.

5. Conclusion

Innovative learning media for tutorials that are applicable to the operation of the overlock sewing machine, the operation of the overdeck sewing machine, and the operation of the buttonhole machine are in the form of videos. It is suitable for learning to introduce the use of sewing tools in the Sewing Equipment course for students of Fashion Design, at State University of Malang. The suggestion for further research is to apply the results of the video in the actual class, namely the class that takes courses in which one of the materials is the use of industrial sewing machines (high speed sewing machines). Besides that, it is also necessary to conduct VTA research related to 1) how to operate a straight stick high speed sewing machine, 2) how to operate a neci machine 3), and how to operate a button-down machine.

6. Acknowledgment

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