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The Development of SketchCa-based Animated Video Learning Media for Building Utility Construction Learning

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ABSTRACT

The development of digital technology today is increasingly opening up opportunities for teachers to develop interactive learning media. So far, the use of learning media that utilises various digital applications has not been widely developed to assist students in understanding teaching materials and maximising digital literacy. This study aims to develop a SketchCa-based animated video learning media on cut-out image material in the Building Utility Construction subject in class XI, Department of Building Modeling and Information Design. The research method used is research and development (R & D). The development of this animated video learning media uses SketchUp and Canva software applications. The data collection technique in this study used a media and technology expert validation sheet. This research is still developing to obtain relevant media results from product feasibility tests by media and technology experts. This paper describes the stages of instructional media design and a literature review to analyse how this SketchCa-based animation media contributes to learning.

Keywords: *Learning Media, Research and Development, SketchCa-based Animation Video*

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INTRODUCTION

Initial observations were made on students of Class X of the Department of Modeling and Building Information Design (DPIB) of a Vocational High School in Yogyakarta. It was found that learning incompleteness problems in the drawing material of the building section in Engineering Drawing Subjects. The provision of subject

matter does not use media, only the lecture, so students have difficulty understanding the material presented, lack of interest and motivation of students in learning, and a lack of digital literacy in students. The sign Construction is considered difficult, where the learning resources used are only static images displayed by the teacher during learning with the help of PowerPoint (Karim, 2018). The teacher becomes the main learning resource who provides material in a class by using examples of floor plan drawings and section drawing only, so some students find it difficult to imagine how a

section looks in the actual shape of a building (Cahyanto & Handayani, 2018).

Innovative learning media play a role in providing stimulus and motivating students to achieve learning objectives. Attractive and appropriate media maximises student learning outcomes (Prasetyo & Widjaja, 2020). Based on these problems, it is necessary to innovate digital-based learning media to help student learning, especially in the material for drawing section in Construction and Building Utilities learning media is a mean teachers can use that in delivering learning material so that students can easily accept it. Learning media can channel messages or learning materials that concentrate attention, interests, thoughts, and feelings in teaching and learning activities to achieve learning goals (Nurdyansyah, 2019). The role of the media is needed in the learning process as a form of communication to increase further the effectiveness of achievement (Susilana & Riyana, 2009). Learning media is an innovative effort used by teachers creatively to deliver lead creative effort teachers employed (Nurseto, 2011) are as follows:

1. Learning media can equate students' perceptions of something because the objects seen by students are the same and consistent.
2. Learning media can concrete an abstract concept, such as explaining the government system, economy, etc., using pictures, graphics, charts, and other relevant media.
3. Learning media can bring up dangerous and difficult-to-obtain objects into the learning process, such as using pictures or videos to

show natural disasters, wild animals and others.

4. Learning media can distribute large or small objects into the learning process, such as pictures of bacteria, viruses and other small objects.
5. Learning media can show the process of objects that move too fast or too slowly, such as videos of bullets shooting with slow motion techniques.

Learning media has various forms according to the material to be delivered. Learning media are generally divided into two forms, namely two-dimensional and three-dimensional and are further classified according to the device into hardware (hardware) and software (software) (Jannah, 2009, p.45). One media that can be used for the learning process is video. Video is a learning media rich in information and complete because it can reach students directly by displaying moving images and accompanying sounds. Where the level of student retention of learning materials can increase significantly if the initial information acquisition process is greater through the senses of hearing and sight (Daryanto, 2015). Video-based learning media has several advantages, including giving messages that can be received more evenly by students, very good for explaining a process, overcoming space and time limitations, being more realistic, can be repeated and stopped as needed, and giving a deep impression, which can affect students' attitudes (Rusman et al., 2013). Animated videos were chosen so that students understand better-projecting images of the building section. An

animation is a still object projected into a moving image that seems alive so that the videos displayed are more varied with interesting and colourful pictures that can increase the learning attractiveness of students (Agustien et al., 2018). Munir (2017) explained that animation can be able to explain something complicated with just pictures or words. That way, animation can be used to explain a material the eye can't see, but the material described can be described by visualising. It is undeniable with the existence of mobile devices such as smartphones and wireless laptops today makes learning using video easy to achieve (Kamlin & Keong, 2020). So, video-based learning media can be the best choice because it can be easily accessed.

The development of animated video-based learning media has been widely developed to be a creative and innovative learning tool. Research conducted by Titania and Widodo (2018) regarding the development of animated video learning media for engineering mechanics subjects for class X Modeling Design and Building Information at the Vocational High School shows that the assessment of material experts on animation learning media gets a score of 68 and a percentage of 100% with the criteria for the media are very feasible, the assessment of media experts on animation gets a score of 84 and a percentage of 91.6%. It is stated that the media is very feasible, and the assessment of the trial of prospective users on animated video learning media gets an average score of 39.5 and a percentage of 76.3 % and stated that the media is suitable for use.

In addition, research related to the development of animated Powtoon video media on sales service subjects at SMK Ketintang Surabaya conducted by Arnold (2018) shows the results of the feasibility value of material expert validation of 81.7%, the feasibility value of media expert validation of 96.7 %, the response of small class students is 98.3%, and the response of large class students is 95.7. Furthermore, research conducted by Fisabilillah and Sakti (2021) regarding the development of animated videos as an effort to increase students' interest in learning tax material in high school shows the results of research data obtained from expert validation, obtaining 97% eligibility validation for media and 89.5% for material, 92% effectiveness, and 94% practicality with very decent category. Research related to animation media development research conducted by Apriadi (2021) indicated an increase in student scores above the KKM after studying with animated video media.

Based on these problems, innovative learning media is needed to help students understand drawing material well, and students can be responsible for developing digital literacy. SketchCa is an innovation in learning media development by combining SketchUp and Canva applications. SketchUp is a program for generating three-dimensional models. Its use is relatively easy to make this software quickly attract attention (Bhirawa, 2015). Canva is an online design program with various templates for various needs, one of which is the video creation feature (Tanjung & Faiza, 2019).

This encourages researchers to research the development of SketchCa animation video learning media. This research was conducted to know how to develop the SketchCa animated video learning media and to measure the feasibility of the SketchCa animated video learning media based on expert judgment. From the several studies above, what distinguishes this research is the animated video created using the SketchUp and Canva application software, and the focus of the animated video created is the subject matter for the Vocational High School majoring in DPIB.

RESEARCH METHOD

The research was carried out as an innovation in applying digital literacy to students in the cut-out drawing of Buildings in the Class XI class Building utility construction subject through the SketchCa animation video media to assist students in the teaching and learning process. The research implementation plan is based on observations made at the Vocational High School majoring in DPIB. The model used in this study uses the type of research and development (R and D), which is the method used to test and develop a product. At the same time, the development method used in this study uses the ADDIE approach. This method has five stages: analysis, design, development, implementation, and evaluation (Branch, 2009).

This study was only carried out until the development stage.

In carrying out the research, a preliminary study was conducted to discover the problems in the classroom during the learning

process. The preliminary study was conducted using classroom observation, interviews, and documentation. After finding the problem, the learning media design stage is carried out. Furthermore, the media created must be measured by audio-visual and digital learning media experts using qualitative descriptive techniques and percentages. This is done to determine the feasibility of using SketchCa learning media as a good learning medium for students.

In practice, the media created is then given to media experts to be seen and assessed on the feasibility test sheet. The feasibility test uses a Likert scale from 1 to 5, which is then presented with the following formula:

Calculation of feasibility test results

$$AP = \frac{\text{actual score}}{\text{ideal score}} \times 100\%$$

Information:

AP: Percentage figures

Actual Score: Score given by expert validator

Ideal Score: The maximum score of the test item assessment

After getting the results, the percentage of mala is seen based on the criteria as follows:

Table 1. Eligibility Percentage Scale

Interval	Criteria
80% < Score < 100%	Very good
60% < Score < 80%	Good
40% < Score < 60%	Quite good
20% < Score < 40%	Not Good

Source: Sundayana (2018)

From these criteria, it can be concluded that the learning media made are feasible or unsuitable for the learning process.

RESULT AND DISCUSSION

Development of SketchCa-Based Animated Video Learning Media

Learning media SketchCa animation video is an innovative media innovation that can be used in the teaching and learning process in the form of animated videos created using SketchUp 2021 and Canva applications that can be accessed by students via mobile devices. This SketchCa animated video media is expected to help improve the understanding of class XI DPIB students on building cut-out drawings for the subjects of Construction and Building Utilities, as well as an innovation in media development to improve digital literacy. The steps for developing the SketchCa animation video are carried out using the ADDIE development model through several stages: analysis, design, development, implementation, and evaluation. However, this research was only carried out up to the development stage, which can be described as follows:

1. Analysis

This stage is the initial stage used to analyse the problems that occur. From the results of observations and interviews, it is known that teachers and students need innovative learning media to help the teaching and learning process, increase motivation and improve students' digital literacy, one of which is the image of building sections that have not been completed for three years in

each generation of students. Then the SketchCa animated video learning media was developed to help find problems faced by students and teachers.

2. Design

The second stage designs, where the material analysis process and basic competencies are carried out on the building section drawing material for construction and building utilities. After that, the indicators and learning objectives to be achieved are compiled, as well as teaching materials that will be used as material for the SketchCa animation video media.

3. Development

Four steps were carried out at the development stage: drafting, video making, review editing and revising the created media.

a. Drafting

At this stage, a storyboard and narration are prepared, which will be made as a video. The storyboard contains the content and flow of the video that will be created, including determining the colour and duration of the video. Also making a narration in the form of a script that will be read by a voice actor to explain the material in the video

b. Video Making

A 3D animation of a house building complete with its construction is made at this stage using the SketchUp software application. Furthermore, the finished 3D image is animated using the scene features in SketchUp which is then

recorded in layers to become an animated video.

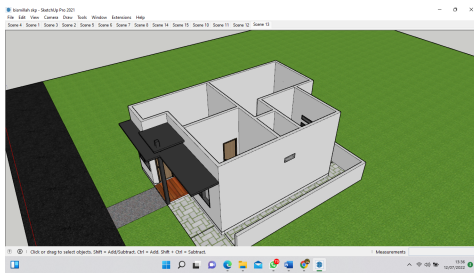


Figure 1 SketchUp animation creation

After the SketchUp animation video has been created, the next step is to create an animated video using Canva.

1) Set up a Canva account

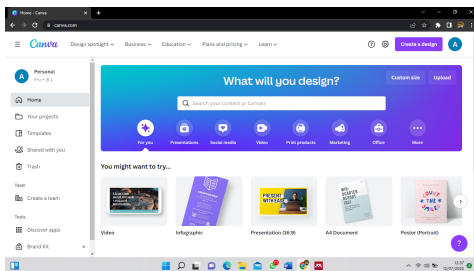


Figure 2 Canva view

- 2) Create video formats and effects and animations according to the concept.
- 3) Input information and material on each video slide
- 4) Insert the created SketchUp animation video on the Canva video slide
- 5) Input back sound and dubbing and decorative animation effects.

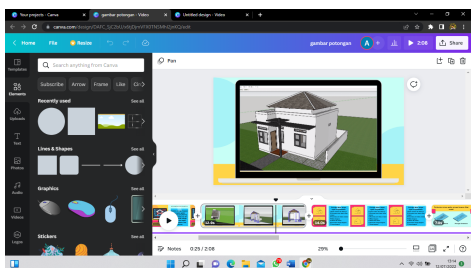


Figure 3 The process of creating videos with Canva

Learning Media Feasibility Test

The SketchCa animated video learning media that has been made must be tested for feasibility by media experts. The media will be tested by experts, namely lecturers from the Department of Architectural Engineering Education, Universitas Pendidikan Indonesia. The media feasibility test instrument is seen from three aspects, namely the quality of the media, the use of language and the layout of the media (Pramudito, 2013). These aspects are further elaborated as follows:

1. Quality of the displayed video
 - The suitability of the video with the material presented
 - The visual clarity of the displayed video
 - Sketchup animation video quality
2. Ease of use
 - Ease of using sketchca. animation video media
3. Voice clarity
 - Dubbing voice clarity
 - Clarity of music or sound effects
4. Text clarity/readability
 - Text can be read clearly
 - Use of letters
5. Quality of language use
 - Use of language according to PUEBI
 - Use of simple and easy-to-understand language
6. Video presentation
 - The display quality of each slide

- A quality blend of colours and backgrounds on image, text and video slides
- The animation quality and slide effects

7. Layout

- The compatibility of the text and video layout on the slide
- Appropriate proportions of images and text on the video

The measurement of this feasibility test uses a Likert scale from 1 to 5 as an assessment of each aspect that is measured. The results of the media assessment are calculated so that the percentage of the results of the feasibility test by media experts is obtained. From the results of the media test assessment conducted by media experts, namely lecturers of Architectural Engineering Education, Universitas Pendidikan Indonesia, the following results were obtained:

$$AP = \frac{\text{actual score}}{\text{ideal score}} \times 100\%$$

$$AP = \frac{69}{75} \times 100\%$$

$$AP = 92\%$$

These calculations show that the percentage of entering the criteria is perfect. Media experts also gave suggestions and inputs, namely to pause the video after explaining the material at the end of the video, avoid the effect of typewriting and replace examples of architectural drawings. Media experts also stated that the SketchCa animated video learning media was worthy of use with revisions. If feasible, the SketchCa animated video media can be used in

student learning to help visually understand the image.

CONCLUSIONS AND SUGGESTIONS

Conclusions

SketchCa animation videos are animated videos that help visualise projected images of building sections so that they are easy to understand. SketchCa animation video learning media was developed using the ADDIE development design. Research is only carried out until the development stage. SketchCa animation videos were developed by combining the SketchUp and Canva applications. The SketchCa animation video learning media was declared feasible to use. The feasibility test was carried out by media experts with a score of 69 with a percentage of 92% and can be categorised as very good. So, from the results of the expert tests, it can be concluded that the SketchCa animated video media is feasible to use.

Suggestion

Further research can develop other innovative learning media, such as Augmented Reality on cut-out image material, so students can easily understand the presented material.

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