Development of Science Learning Videos with the Canva Application on Socioscientific Issues Content

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Abstract. The purpose of this study was to determine the feasibility and practicality of science learning videos with the Canva application on socioscientific issues content. The type of research used is research and development. The development model used in this study uses the model developed by Dick and Carrey, namely the ADDIE development model. The ADDIE development model includes analyze, design, develop, implement, and evaluate. Products that have been developed will then be assessed for feasibility by material and media experts. After being tested for feasibility and going through the revision stage, the product developed was tested on students. The subjects of this research trial were science and social subject educators and class X students of SMKN 2 Metro. The instrument used in this study was a questionnaire sheet using a stepped scale (Likert scale) with 5 assessment categories. The results of the study show that the learning videos developed are very suitable for use in learning to support the learning profile of Pancasila with a score of 89.53% by media experts, including in the very feasible category and 80% by material experts, including in the appropriate category.

1 Introduction

Human life is entering the 21st century, which is marked by the development of digital information technology in all aspects of life [1]. Since 2011, Indonesia has faced the era of the industrial revolution 4.0 [2], the development of the industrial revolution 4.0 resulted in all aspects of life being done digitally, including aspects of education [3]. Education is one of the main aspects of human life that must be possessed in facing various challenges and changing times [4]. An important part of education is science learning, which not only aims to transfer knowledge, but also aims to develop an understanding of a concept and train students' critical thinking skills [5,6]. One approach that appears in science learning is the socioscientific issues approach. The socioscientific approach involves social problems that occur in society related to science. The application of the socioscientific issues approach in learning has excellent benefits for students, which can form students' scientific literacy skills, improve critical thinking skills and improve communication and argumentation skills regarding social problems that occur around students [7]. Through the socioscientific issues
approach, students can freely apply scientific knowledge in real life independently facilitated by educators [8].

Along with the development of technology in the world of education, information technology has an important role in the process of transforming learning, which at first the learning process could only be done through traditional learning, now it can be done through learning that is more active, interactive and interesting [9]. Learning that at first could only be done face to face between educators and students, with the current technological developments learning can be done through online learning or online learning using various media that can support the learning process [10]. Along with the development of the times, education must also be prepared to provide modern teaching and learning facilities by utilizing existing technological developments. In solving problems regarding education, technology is needed because education is an activity that has broad and complex dimensions, and is influenced by many variables [11]. This means that there is a need for innovation in the world of education to keep pace with technological developments, one of which is by maximizing the use of technology-based learning media [12]. The selection of learning media must be adjusted to the needs, the ability of learning media as a means to achieve learning objectives and increase the effectiveness and efficiency of learning needs to be put to good use [13]. Learning media is anything that is used by educators to convey information to students to stimulate attention, interest, concentration, and feelings of students when teaching and learning activities take place in order to achieve learning goals [14]. One of the learning media that utilizes technology is learning media in the form of videos. Video is a non-printed teaching material that contains complete information that can be used to convey learning material in the form of moving images equipped with sound [15]. Video has the ability to present information visually, audibly and narratively, so that video is able to arouse students’ interest and understanding. The use of learning videos is also considered to save time in learning because educators no longer need to write material on the blackboard, so educators have more time to explain material [16]. In this study, the authors used the Canva application to create learning videos as an effort to take advantage of technological developments. Canva is a graphic design application that allows its users to design various characters online, such as designing posters, brochures and infographics [17]. Initially, the Canva application was only designed for graphic design, but over time, the Canva application has developed into a diverse platform, which provides tools for designing visual presentations and learning materials. Canva allows users to create their own designs without having advanced design skills [18]. With the various templates that have been provided, users can easily create the designs they need. Apart from that, the strength of Canva also lies in the ability to combine text, images and other elements very easily without requiring extra expertise.

In this study, the researcher aims to combine the potential for developing learning videos by utilizing the features available in the Canva application in learning based on socioscientific issues. Through the development of science learning videos with the Canva application on socioscientific issues content, it is hoped that it can overcome problems that arise in learning such as overcoming the need for better material visualization. By utilizing this approach, it is hoped that the results of this research will provide guidance to educators in developing science learning materials that are relevant to socioscientific issues using the Canva application.

2 Research Methodology

This study uses research and development (R&D) methods. The Research and Development method is a research method used to create a new product and assess the effectiveness of the
product [19]. The product referred to in this study is science learning videos on socioscientific issues.

The development model used in this study is the development model developed by Dick and Carey, namely the ADDIE development model. The ADDIE development model consists of (1) analyze, (2) design, (3) develop, (4) implement, and (5) evaluate, which aims to develop new products or improve existing products [20]. Products that have been developed will then be tested for feasibility by experts, namely by material experts and media experts. This stage is called the validity test stage. The trial data that has been obtained will then be analyzed. At the data analysis stage, the data to be analyzed are qualitative descriptive data and quantitative data. The instrument used in the validity test uses a questionnaire sheet that uses a stepped scale (Likert scale) with 5 assessment categories, the assessment categories are shown in Table 1.

Table 1. Respondents.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Worth it</td>
<td>5</td>
</tr>
<tr>
<td>Worthy</td>
<td>4</td>
</tr>
<tr>
<td>Decent Enough</td>
<td>3</td>
</tr>
<tr>
<td>Less Eligible</td>
<td>2</td>
</tr>
<tr>
<td>Very Inadequate</td>
<td>1</td>
</tr>
</tbody>
</table>

Then the feasibility percentage value of each item statement is calculated with the following formula [21]:

\[ P = \frac{\sum x}{\sum x_i} \times 100\% \]  

Information:

- \( P \) = ValuePercentage
- \( \sum x \) = The number of respondents' answers in one item
- \( \sum x_i \) = The sum of the ideal values in the item

The percentage data that has been obtained is converted into a qualitative value according to the assessment criteria presented in Table 2.

Table 2. Expert assessment score interpretation criteria.

<table>
<thead>
<tr>
<th>Score Intervals</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>0% ≤ P ≤ 20%</td>
<td>Very Unworthy</td>
</tr>
<tr>
<td>21% ≤ P ≤ 40%</td>
<td>Worthy</td>
</tr>
<tr>
<td>41% ≤ P ≤ 60%</td>
<td>Enough</td>
</tr>
<tr>
<td>61% ≤ P ≤ 80%</td>
<td>Not feasible</td>
</tr>
<tr>
<td>81% ≤ P ≤ 100%</td>
<td>Very Unworthy</td>
</tr>
</tbody>
</table>

2.1 Analyze

The initial step taken in this research and development is to analyze the learning conditions to identify problems and formulate appropriate and appropriate solutions to the problems experienced. The analysis carried out at this stage includes needs analysis and instructional analysis.
2.1.1 Need Analysis

At this stage the researcher analyzed the basic needs in the learning process, namely the need for interesting and interactive teaching materials that support the learning process in accordance with the profile of Pancasila students at school. Needs analysis was carried out using qualitative techniques by interviewing science and social subject educators, as well as using quantitative techniques by administering needs questionnaires to students.

2.1.2 Instructional Analysis

The instructional analysis stage is carried out to determine the concepts that will be presented in the video, determine what socioscientific issues content will be presented. At this stage, the concept and content of socioscientific issues are determined, which will be presented in the form of an earthquake disaster mitigation concept that is adapted to learning outcomes and learning objectives.

2.2 Design

At this stage the selection and planning of learning products to be developed based on the results of the needs analysis is carried out, at this stage the preparation of the learning objectives (ATP) flow is carried out, the determination of product assessment standards to assess the feasibility of the product before the implementation stage and the product planning stage are carried out. The product planning stage includes planning the presentation of material and presentation of content. The product planning stage is shown in Figure 1.

![Fig. 1. Learning Media Content Planning.](https://example.com)

2.3 Develop

The development stage is the stage where product development is carried out based on the results of the analysis and planning stages. The development stage is carried out in four steps, namely: (1) preparation of learning media in accordance with the results of the product
design at the design stage, which includes the learning video design process in the form of adding text, images, animation and video simulations as well as voice filling using the Canva application. (2) Product validation by validators who are experts in their fields. (3) Product revision based on suggestions and input from the validator's assessment. (4) Small group trials.

Fig. 2. Video Content Design.

2.4 Implementation

The implementation stage is the stage of implementing the product developed in the learning process in the classroom by involving educators and students as test subjects for the product being developed. The implementation phase was carried out for one science and social subject teacher and 22 students at SMKN 2 Metro. The implementation phase is carried out with the following stages, namely: (1) Provision of products developed to educators and students as field trial subjects. (2) Distribution of practical response questionnaires to the products developed to educators and students who are the test subjects.

2.5 Evaluate

The Evaluation of the feasibility of the products developed in this study was carried out in two stages, namely at the development stage with the help of material and media expert validators and small group trials on 11 class X students of SMKN 2 Metro. The second stage is the implementation stage with the help of educators and students as field trial subjects [22].
Fig. 2. Instructional Video Development Procedure.

3 Result

The product produced from this research is a science learning video on socioscientific issues content developed using the Canva application. The material presented in the video is adapted for the tenth-grade level of SMK in science and social subjects. The developed media presents material in the form of text, images and video simulations.

The feasibility of the product being developed is assessed from the validation results carried out by material experts and media experts on the product being developed. The results of expert validation are presented in the following Table 3:
Table 3. Media Expert Validation Results

<table>
<thead>
<tr>
<th>No.</th>
<th>Assessment Aspects</th>
<th>Appraisal Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Audio Visual Aspect</td>
<td>88.57</td>
</tr>
<tr>
<td>2</td>
<td>Media Engineering Aspects</td>
<td>90</td>
</tr>
<tr>
<td>3</td>
<td>Aspects of Media Use</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td><strong>Average Percentage (%)</strong></td>
<td><strong>89.53</strong></td>
</tr>
<tr>
<td>Criteria</td>
<td></td>
<td>Very Worth it</td>
</tr>
</tbody>
</table>

Table 3 shows the results of the evaluation of products that have been developed by media experts in the very proper category, with the acquisition of product assessment results in the audio-visual aspect of 88.57%, in the media engineering aspect by 90% and in the media use aspect by 90%. Thus, obtaining an average percentage value of 89.53%.

Table 4. Material Expert Validation Results

<table>
<thead>
<tr>
<th>No.</th>
<th>Assessment Aspects</th>
<th>Appraisal Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Content Eligibility Aspects</td>
<td>80</td>
</tr>
<tr>
<td>2</td>
<td>Presentation Feasibility Aspects</td>
<td>80</td>
</tr>
<tr>
<td>3</td>
<td>Aspects of Language Feasibility</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td><strong>Average Percentage (%)</strong></td>
<td><strong>80</strong></td>
</tr>
<tr>
<td>Criteria</td>
<td></td>
<td>Worthy</td>
</tr>
</tbody>
</table>

Table 4 shows the results of the evaluation of products that have been developed by material experts in the appropriate category, with the acquisition of product assessment results of 80% on the content feasibility aspect, 80% on the presentation feasibility aspect, and 80% on the language feasibility aspect. Thus, obtaining an average percentage value of 80%.

Based on the two tables above, the product developed in the form of science learning videos on socioscientific issues content is declared feasible to use.

4 Conclusion

The development of learning videos in this study uses the ADDIE development model. The technique of presenting material in the video uses a socioscientific issues approach. The topic presented is in the form of earthquake disasters in Indonesia. Based on the results of validation by experts, the developed learning videos are very suitable for use in learning to support the learning profile of Pancasila.

References

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