

# Development of Sparkol VideoScribe-Based Physics Learning Videos on Elasticity Material

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**Abstract.** The emergence of the Covid-19 outbreak which has shocked the world today has caused the Indonesian government to issue a distance learning policy. This policy demands the creativity of teachers to be able to develop various learning media in order to continue to carry out a good educational process during a pandemic. This study aims to develop physics learning videos that are valid, practical, and easily understood by students. This type of research is Research and Development (R&D) using the ADDIE development model. Videos are developed on elastic material using the Sparkol VideoScribe application. The research instrument was a validation questionnaire for material experts, media experts, and physics teachers, and the responses of class XI students at SMAN 1 Brang Rea. The learning videos developed are very feasible based on the validation results of material experts at 84%, media experts at 83%, and physics teachers at 94%, with an average percentage of 84%. The results of the student response test to the video obtained a percentage of 90% so it was categorized as very good. Thus the video learning physics based on Sparkol VideoScribe on elasticity material is very appropriate to be used as a medium in learning physics.

*Keywords:* learning video, sparkol videoscribe, elasticity.

## 1. Introduction

The globe was surprised by the Covid-19 outbreak, also known as the coronavirus disease 2019, toward the end of 2019 [1]; [2]. This virus is hazardous because it attacks the respiratory system, causes lung infection, and even causes death [3]; [4]. The high rate of spread of Covid-19 resulted in this outbreak being designated by WHO as a Global Pandemic [5]; [6]. As of January 7, 2022, the Covid-19 outbreak has spread to 204 countries worldwide. In Indonesia, 4,265,187 people have been confirmed positive for Covid-19, of which 4,115,572 people have been declared cured while 144,121 others have died [7]; [8]; [9].

The Covid-19 outbreak that is currently ravaging the world has a huge impact on a variety of spheres of life, including health, economy, social, politics, education, tourism, and a number of other spheres [10]. Across Indonesia's whole country, the Covid-19 pandemic has increased mortality and reduced access to healthcare, according to the health sector [11]; [12]; [13]; [14]. In the education sector, the Covid-19 pandemic has led to the emergence of distance learning policies, where every student must study at home online using various available media [15]; [16]; [17]; [18]; [19]; [20]. This is also felt by the teachers at SMA Negeri 1 Brang Rea, West Sumbawa Regency. According to the findings of teacher interviews in physics, online learning makes students less interested in learning. Physics lessons that were previously complicated and boring become even more difficult when learning is done online. Because they merely listen to the lecture, take notes, and complete the teacher's homework, students become passive. Moreover, the used learning tools continue to lack innovation.

Distance learning policies demand the creativity of teachers to be able to develop various learning media in order to continue to carry out a good educational process during a pandemic [21]. Learning media is one of the elements that have a major influence on the process of teaching and learning activities [22]; [23]. Education experts conclude that learning media can affect students' interests, emotions, social attitudes, and reasoning [24]; [25]. This must be accompanied by the teacher's ability to transfer material

to students through communication interactions in a process of learning activities carried out. Based on these problems, teacher creativity is needed to develop learning media as a strategy to facilitate the process of learning activities [26]; [27].

Teachers can use various types of learning media during the learning process such as text media, audio, video, animation, graphics, interactive media, and special effects media [28]; [29]. Video media is an option that can be used in a learning activity because it is equipped with a combination of text, animation, sound, and material that is applicable and can be used classically and individually [30]. Video media will provide a better learning experience because in it there are several senses that work. Video media can also present a real, systematic concept and can be developed according to the material to be delivered [31]. The benefits of each learning media depend heavily on the desire and ability of teachers and students to communicate and interact with the messages in the learning media used [32].

Several scholars have worked on the creation of learning material in the form of videos [33] developed a learning video assisted by the PowerDirector 18 application on circle material for learning Mathematics for sixth-grade elementary school students. In addition, [34] developed a 3D animation learning video using the Blender application on magnetic field material. In this study, researchers developed video learning based on the Sparkol VideoScribe application. Like other video development software, Sparkol VideoScribe includes audio-visual media, which combines audio and visual media [35]. Sparkol VideoScribe can be used to create designs in the form of white background animations and use attractive and easy-to-use displays.

Using Sparkol Video The process of learning exercises is made much more appealing to students' attention and interest through scribe-based learning films. Pupils will pay more attention to the lessons being taught. The use of Sparkol VideoScribe as a learning medium is not too complicated [36]. Video displays can be made attractive, and simple, and can be used online or offline. Video viewing can also be adjusted according to needs [37]. The use of Sparkol VideoScribe as a learning medium is also able to increase student enthusiasm and motivation with an average percentage of 94.54% [38].

The Sparkol VideoScribe application has been used by a number of researchers to develop learning videos [39] used the Sparkol VideoScribe application to develop learning videos in mathematics history courses. [40] developed a learning video on the subject of motion kinematics. [41] developed a learning video based on the Sparkol VideoScribe application on the subject of the straight motion. Based on the previous research studies above, there has been no previous research that has developed learning videos based on the Sparkol VideoScribe application on elasticity material. The use of the Sparkol VideoScribe application in making physics learning videos is more interesting than other applications such as virtualDub. VirtualDub does not have the editing power of a general-purpose editor. So that in making physics learning videos it is limited when using the virtualDub application. Therefore, in this study researchers have developed a learning video based on Sparkol VideoScribe on elasticity material. Videos are made and developed so that learning videos are obtained that are feasible to be applied in the learning process.

## 2. Method

This study is a form of research and development that intends to create a product in the form of instructional movies for elastic material based on Sparkol VideoScribe. The film was created using the four steps of the ADDIE development model: analysis, design, development, implementation, and evaluation [42].

This research begins with the analysis stage, namely analyzing the potential of students and the problems that occur. The design stage is the product design stage. The next stage is development, namely developing learning videos based on the designs that have been made. Next is the implementation stage, namely the video trial stage in the learning activity process. The evaluation stage is the stage to evaluate each stage carried out. Evaluation is carried out through material expert validation tests, media expert validation tests, teacher validation tests, and student response tests.

The videos that have been validated are tested on class XI high school students to assess students' responses to the videos that have been developed. There were 10 student response indicators assessed in this study, including 1) students' preference for Physics; 2) Video capabilities in providing new learning experiences; 3) Increasing student enthusiasm for learning; 4) The effect of sound and pictures

on students' memory; 5) The level of interest in learning using videos; 6) Students' understanding of the notion of elasticity; 7) Students' understanding of stress, strain, and modulus of elasticity; 8) Students' understanding of Hooke's law; 9) Students' understanding of spring constants in series and parallel arrangements; 10) The effect of examples of questions and exercises on students' understanding of elasticity material.

The research instruments used were expert validation sheets and questionnaires to determine student responses. The results of the validity test and responses from students are analyzed using the average assessment criteria of each aspect of the assessment and are then interpreted according to the assessment criteria [43].

### 3. Results and Discussions

The development of learning videos includes 5 stages namely analysis, design, development, implementation, and evaluation. At the analysis stage, the researcher conducted a Needs Assessment and Front-End Analysis. Needs Assessment in the form of gathering information/observations about the learning conditions at SMAN Brang Rea which was conducted on August 1, 2021. Based on the results of these observations, it is known that: 1) Physics is considered a quite complicated lesson because it is only limited to listening to material and students do not directly observe what they are learning, 2) The material is delivered using textbooks, the teacher explains more while the students only listen, 3) The learning media used is less innovative so students get bored easily, 4) the use of video as a learning medium is still very lacking. The teacher only takes videos from Youtube where the video content is not necessarily in accordance with the material and needs of students. Based on the results of these observations, a media was developed in the form of learning videos based on the Sparkol VideoScribe application. The next activity is front-end analysis, namely collecting references in the form of curriculum, lesson plans, and books related to the material, as well as reviewing examples of Sparkol VideoScribe-based learning videos on YouTube as a reference in developing media in the form of learning videos. From the results of the analysis of the curriculum, Basic Competency (KD) was selected as the object of development where the subject matter of KD is elasticity.

At the design stage, the researcher begins to design learning videos which include the selection of teaching materials, the methods to be used, and the collection of design objects. The teaching material used by researchers is learning videos based on Sparkol VideoScribe. The learning method used is a combination method, namely combining discussions with presenting learning videos. The collection of design objects includes determining KI & KD, learning objectives, materials, sample questions, images, audio, and animations that will be included in the learning video script. Then the research instruments were compiled, namely validation sheets from material experts, media experts, teachers, and responses from students which were used to assess the feasibility of the learning videos that were made.

Learning videos are created at the development stage in accordance with the designs created at the earlier phases. Software like Sparkol VideoScribe is used to create educational videos. This application contains a variety of engaging animations that help pupils comprehend and retain the information that has been provided. The videos that have been designed are then evaluated by 2 lecturers as material expert validators, 2 lecturers as media expert validators, and 2 Physics teachers to find out whether the videos made are suitable for use or not. Suggestions for improvement submitted by material experts and media experts became a reference in improving the videos that were developed. The several suggestions and input from the material expert validator and media expert along with the revisions that have been made are shown in Table 1.

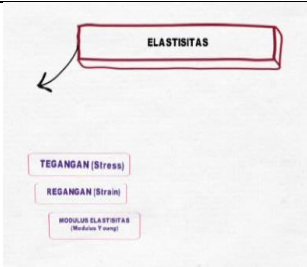
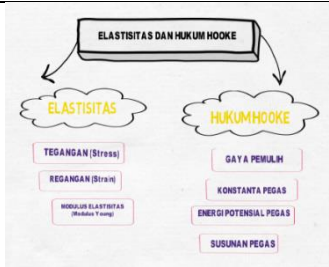



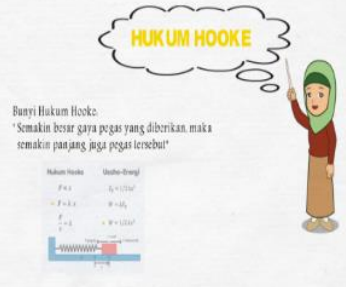
**Table 1.** Results of revisions/improvements from expert experts.


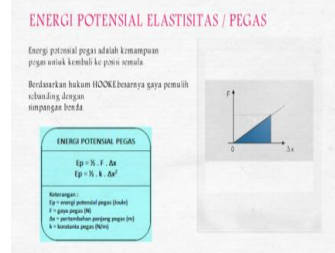
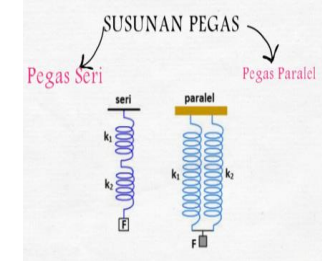

No	Suggestions/Comments	Improvements/Revisions
1	Add basic competencies and indicators to learning videos	Basic competencies and indicators have been added
2	Time should be sped up in certain parts because video media is intended for high school students	The time on certain passages has sped up
3	The sound of explaining the material on the video is still low.	Clarify the sound in the explanation of the material.

4	The discussion of material is added again to deepen the concept of physics	Adding material to deepen physics concepts
5	It is necessary to add pictures that are related to real events in our daily lives (events that are often observed by students).	Adding examples of the application of elasticity that is often observed by students
6	The concept of physics has not been discussed clearly	Adding a more in-depth discussion of physics concepts
7	Added HOTS questions (classified as difficult)	HOTS questions have been added to the learning videos to train students' understanding
8	We recommend that images relating to the material elasticity reproduced	reproduce the image related to the elasticity of the material.

Based on the evaluation results from the material expert validator and media expert, the learning videos were improved according to the suggestions made. Revisions were carried out thoroughly starting from the aspects of content quality, implementation, and appearance to make it more attractive to students. Changes in learning videos before and after revision are shown in Table 2. The results of the validator's assessment are shown in Figure 1.

**Table 2. Video Results Before and After Revision.**

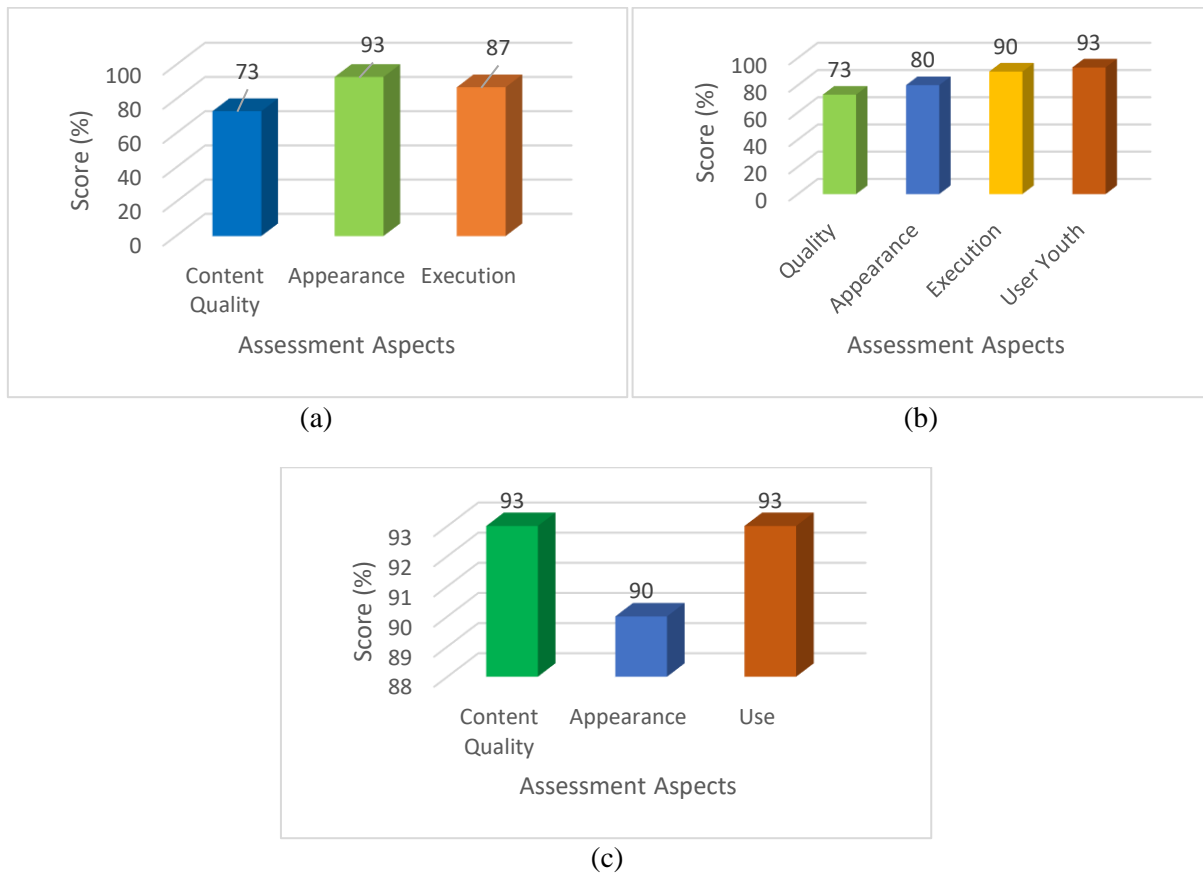
Before Revised	After revision
	
	
<p>There is no KI &amp; KD</p>	
<p>There is no explanation of Hooke's Law</p>	

Before Revised	After revision
<p>There are no sample questions for Hooke's Law material</p>	
<p>There is no elastic potential energy matter</p>	
<p>There is no spring array display</p>	
<p>There are no practice questions</p>	

The validation results from material experts show that the learning videos made have a quality percentage of 73% (Decent) in terms of content quality, 87% (Very Feasible) in terms of implementation, and 93% (Very Feasible) in terms of appearance. The average percentage of the results of the material expert's assessment of all aspects of the assessment is 84% so the quality of learning videos made based on the assessment of material experts is categorized as Very Feasible.

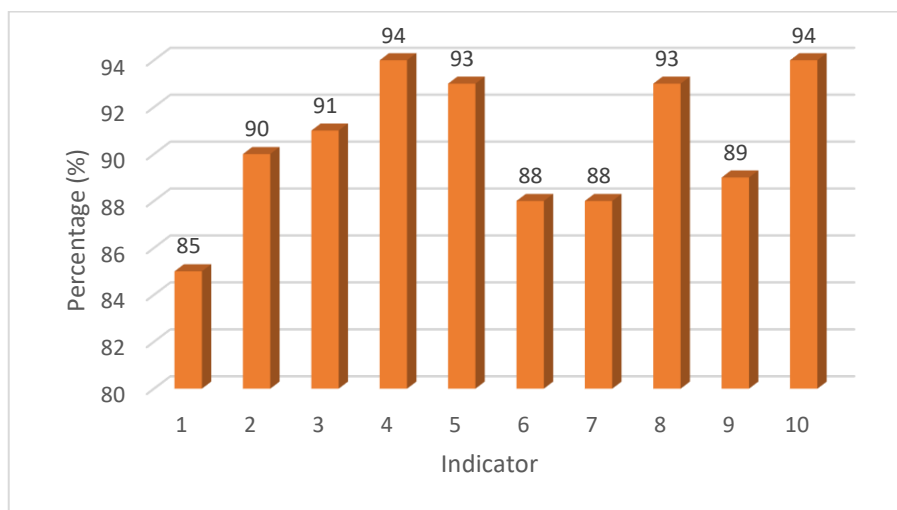
In media expert validation, obtained a quality percentage of 80% (Very Eligible) for the content quality aspect, 90% (Very Eligible) from the implementation aspect, 80% (Very Eligible) for the appearance aspect, 90% (Very Eligible) for ease of use aspect. The average percentage of the results of the media expert's assessment of all aspects of the assessment is 83% so the quality of the learning videos made according to the assessment of media experts is categorized as Very Eligible.

In the validation of the Physics teacher, a quality percentage of 93% (Very Eligible) was obtained for the content quality aspect, 90% (Very Eligible) for the display aspect, and 98% (Very Eligible) for the usage aspect. The average percentage of the results of the physics teacher's assessment of all aspects of the assessment is 94%, so the quality of the learning videos made according to the Physics teacher is categorized as very feasible. From the results of the assessment of material experts, media experts, and Physics teachers, it was found that the average percentage of feasibility was 84%, so it was concluded that the learning videos made were categorized as Very Feasible.



**Figure 1.** Validation results: (a) Material expert, (b) Media expert, (c) Physics teacher.

At the implementation stage, trials were carried out at SMAN 1 Brang Rea to find out student responses to the videos that had been made. The trial was carried out on 32 students in class XI MIA 1 and XI MIA 2 at SMAN 1 Brang Rea, which was carried out in September 2021. Students watched a learning video showing elasticity material. After finishing observing, students were given a questionnaire to find out their responses regarding the learning videos that had been made. The results of student responses to the learning videos are shown in Figure 2.



**Figure 2.** Results of student responses to the video that was developed.

Based on the results of student response tests to video learning based on Sparkol VideoScribe, student ratings for each aspect are in the very good category ( $\geq 80\%$ ) with an average percentage for all aspects of 90%. The use of learning videos affects the level of students' preference for Physics subjects with a percentage of 85% (very good). The developed learning videos are also able to provide new learning experiences with a percentage of 90% (very good).

The use of Sparkol VideoScribe-based learning videos is able to increase student enthusiasm for learning with a percentage of 91% (very good). This is reinforced by the results of research [44] which state that the use of learning videos can foster students' interest in learning. Students also considered that learning using videos was more interesting (93%). The use of sound and images in the video can strengthen students' memory with a percentage of 94% (very good). This is because learning videos combine images, sounds, music, and animations into a unified whole. This is in line with the opinion of [45] states that the addition of sound and music in videos will be able to attract students' attention in interpreting the lessons given. The use of images is also able to convey multiple meanings and clarify the message conveyed [46].

The results of the assessment above, it can be concluded that the video learning based on Sparkol VideoScribe that has been developed has a positive effect on the learning process in class. This is supported by the responses of students who responded that the use of videos made them more interested and motivated in learning physics, especially the material of elasticity. The use of learning videos helps students understand the material presented. The existence of examples of questions and exercises in the video also helps increase student understanding.

#### 4. Conclusion

Video lessons on elasticity have been developed using the Sparkol VideoScribe application. The validation results from material experts, media experts, and Physics teachers show that the videos they make are in the very feasible category. The test results on students also show that the videos developed are included in the very good category. The use of learning videos really helps students in learning the material being taught. Video media also provides new experiences to students and increases students' motivation, enthusiasm, and interest in physics lessons. It is hoped that future researchers will develop learning videos on other materials and proceed to the stage of measuring the effectiveness of videos on student learning outcomes.

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