The Design of Physics Learning Video as Joyful-Based Learning Media Enrichment by Powtoon

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Abstract. This research aims to develop physics learning videos as fun and meaningful, based on joyful learning. Joyful learning requires engaging in the delivery of learning material. The video development process uses Powtoon software. This video is a form of media that can be used to convey learning in a fun and meaningful way. This stage of development research consists of defining, design, developing, and disseminating. This paper describes the development process of each stage. The output of this research is a video of learning that will be appropriate to be used as a medium for learning high school physics.

1. Introduction
Unlike other learning models that revolve around gathering information with meaningless learning processes, the concept of joyful based learning makes learning fun and full of meaning [1]. Joyful learning is achieved when individuals or groups feel satisfied and happy after the learning process takes place [2]. The lecture method is still a popular choice for teachers in schools because of the limitations of the media and the weak ability of teachers to make their media [3]. It makes students easy to feel bored with learning methods. However, they will be motivated to learn when art is put into the learning process, where there are innovative media in the form of images, videos, and smartphone activities for students [4]. In previous research on the development of innovative learning media, videos integrated with student worksheets have the power to support higher-order thinking skills [5] and facilitate learning activities in the form of experiments in the laboratory [6].

Designing a fun activity is not only limited to relaxing and playing games [7] but can also take advantage of playfulness properties that can also enhance one's creativity [8]. The use of fun videos turns out to be adequately used in learning. It is caused by the positive effects of the humorous condition that is built on the learning styles and metacognition of students [9]. Advances in video editing technology and social media make the realm of online video develop very rapidly. It is used by educators and students to become supporters of learning both formal and informal [10]. The advantages of using online video, include pause and resume, can be combined with various animations, can visualize abstract concepts, and can be accessed 24 hours via a smartphone or other gadget [11].

Joyful learning video concepts have been widely circulated on YouTube, but the most, are foreign products, so we find little joyful learning science learning videos in Indonesian. The video contained
on YouTube is also limited to be used as a learning video, there is still specific science material which is very difficult to find [12]. It caused by the current circulation is still not by the demands of the existing indicators. In the world of marketing, online videos with funny and humorous elements are excellent strategies. Because that way, internet users unconsciously persuaded and helped to share the online video with their friends [13]. One animation-based video presentation software that can be used to make learning videos is Powtoon. It is just that Powtoon is still rarely used by educators in Indonesia as a learning medium [14] because they prefer existing media, rather than making media themselves.

This research aims to develop a Joyful Learning-based learning video using a video editing software called Powtoon. The research we will conduct is limited to assessments by instructional media experts and exposure to the results of the development of Joy Learning-based learning videos based on Powtoon.

2. Method
This research is development research in which the stages are defining, designing, developing, and distributing.

2.1. Defining Phase
At this stage, the writer analyzes the physics learning media that he wants to develop. The chosen media is a learning video, while the material chosen is Newton Gravity Law. It is intended so that the products developed can support learning based on joyful learning, not just developing products.

2.2. Design Stage
After selecting the media and material, the writer then designs the concept of the learning video. At this stage, the writer also arranged scenes that will be created when making a video later. Video scripts will be said by dubber in the video. The scripts are made into several segments based on the competence of Newton's Laws of Gravity.

Figure 1. Development stage at Powtoon
2.3. Development Stage
At this stage, the writer makes a video project using Powtoon then chooses the type of Powtoon, Explainer Video, to start the project.
Furthermore, the author includes several supporting videos that have been provided by Powtoon and adds the main characters of the video. The author also dubbed as the voice of supporting animated characters. Scenes, plot, and video scripts are made based on indicators that must be achieved in Newton's Law of Gravity. In the process, the making of this product also asks for input from learning media experts so that the results are more optimal and can be used by students.

2.4. Dissemination Stage
After the product is finished, the learning video will be uploaded on YouTube using the authors’ account. Furthermore, we will see the response and feedback from the viewers to be used as input in the future and as a reference for the feasibility of the product being made. Powtoon is an online web app like PowerPoint or Prezi that works using slides, pictures, or music. The advantage of Powtoon is that users can add engaging animations, sounds, music, even specific video themes provided directly by Powtoon or imported from external sources.
Powtoon can be accessed through www.powtoon.com uses Adobe Flex technology, which produces XML files that can be exported to YouTube. Powtoon also works on The Cloud system, which means users must register before using it [15]. Powtoon is available in free and paid versions. In the free version, the choice of media such as music, sound, video, and template is limited. The output will also be watermarked. While the paid version provides a variety of media options and there is no watermark on the output later.
Powtoon has several types of theme choices that can help users to start a project, including Video explainer, Video Marketing Infographic Video, Video Ads, and others. In this study, the authors used the Explainer Video theme. Almost all features can be accessed in one Powtoon screen such as built-in cartoon characters, animated models, cartoon objects, attractive transitions, music with various themes, and other modern effects. In this study, the authors chose to use the built-in character in the form of a girl as a presenter that will appear from the beginning to the end of the video. The voice on the character is the voice of the author recorded through a smartphone and uploaded to the Powtoon so that it can be inputted into the video. In the orientation and explanation of the concept, the authors use videos from Powtoon or internet videos imported into Powtoon so that the concepts are better conveyed to students. In the formula explanation section and discussion of example problems, the writer uses the whiteboard explainer feature with handwritten animation effects.

Table 1. Assessment instrument of media expert.

| No | Aspect         | Indicator                                                                 |
|----|----------------|---------------------------------------------------------------------------|
| 1  | Technical Quality | Video is easily accessible                                                 |
|    |                 | Quality of Video display is good                                          |
|    |                 | Quality of video sound                                                   |
| 2  | Usability       | Video is easy to understand                                               |
|    |                 | Consistent animation design                                              |
|    |                 | Neat title and animation layout                                           |
| 3  | Media’s Element | Graphic design and illustrations are consistent with the material         |
|    |                 | Letters can be read well                                                  |
|    |                 | Accuracy in size, color, and selection of writing types                   |
|    |                 | Appropriate size, color, and shape of the object                         |
|    |                 | Elements between media are compatible and support each other              |
| 4  | The content     | The material following basic competencies                                |
|    |                 | The systematic presentation of the material makes it easier for students to understand the material |
In addition to online web apps, Powtoon also released an online Android App called Powtoon Connect for Android. This application cannot be used for editing but can be used for uploading media, voiceover, display projects that have been made, and share projects to social media. The Powtoon interface is attractive and easy to use even for beginners, making this service very suitable for making teaching media especially for students who like the relaxed and non-formal learning atmosphere. Before distributing the learning video that has been made, the author consulted the media expert and the material expert by asking for their advice. Table 1 and Table 2, show the assessment instruments.

| No | Aspect                  | Indicator                                                                 |
|----|-------------------------|---------------------------------------------------------------------------|
| 1. | Quality of Media        | Sound quality is good                                                     |
|    |                         | Quality video is good                                                     |
|    |                         | The layout of the writing and animation support each other               |
|    |                         | Elements between media are compatible and support each other             |
| 2. | The material            | The material following basic competencies                                |
|    |                         | The systematic presentation of the material makes it easier for students |
|    |                         | to understand the material                                               |
|    |                         | Illustration following the material presented                           |
|    |                         | Completeness of material                                                 |
| 3. | The benefits            | Overcoming monotonous media                                              |
|    |                         | Overcoming the limitations of teaching media                             |
|    |                         | Utilization for teachers                                                 |
|    |                         | Benefits for students                                                    |
| 4. | The Language            | The language used is suitable for high school students                   |

3. Discussion
Learning videos that the author has made is included as joyful learning because the video combines a variety of interesting and funny content from the perspective of the students. Here are some displays of learning video products that have been made and shown in Figure 2.

![Figure 2. Learning video products.](image)

The learning video, which is approximately 15 minutes long, includes two competencies to be achieved in Newton's Law of Gravity. This video can also be used in developing cognitive levels of C1, C2, C3, C4, and C5 based on bloom's taxonomy. The product developed is made with a high possibility of attracting students' learning interest. This video has been filled with interesting content that is funny by using everyday language so that students can understand and enjoy the video. Besides, the visuals that are in full color and creativity made this video memorable and fun to watch.
Unlike other Powtoon product that has been developed by Fimbriani (2016) [16] that used slides, this product is only full of animated video with fresh music and attractive voiceover. However, both of them are used for learning media in the classroom. Other Powtoon product that has been developed by Fuchs (2017) [17] is used for campus orientation event. The similarity of Fuchs’s Powtoon product with this research product is that both of them are featured fun and engaging. These Powtoon products have a positive impact on education. A study by Hamilton-Hankins, O. (2017) showed that several technological tools including Powtoon has a positive impact on instructional practices and students’ engagement levels in the classroom [18].

4. Conclusion
This physics learning video of Newton's Law of Gravity material has been created using the Powtoon Online Web App. The development process has been through validation by asking for advice from media experts and material experts before the product will finally be uploaded on YouTube. The result of validation showed that this video is feasible to be used as a learning media that can support joyful learning.

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