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Development of Interactive Learning Media Using the Canva Website on the Topic of Elasticity and Hooke's Law

Alya Puspita Zahra[1], Regina Bilqis Wardani[2*], Rene Karlos Bernardo[3]
[1,2*] Physics Education, FKIP, Mulawarman University, Indonesia
[3] University of Santo Tomas (UST), Manila, Philippines
[*]E-mail Penulis Korespondensi: rgnbilqiswrdni@gmail.com

Abstract

This research develops Canva website-based physics learning media for Elasticity and Hooke's Law. The research focuses on introducing and utilizing the free version of the Canva website as an interactive learning media for teachers in the classroom. The practicality of this site makes it easily accessible to everyone and has a fairly wide reach. Using the Research and Development (R&D) research method, researchers used the 4-D research model, which consists of defining, designing, developing, and distributing products to prospective physics teachers to assess their feasibility. The feasibility results obtained showed about 78.94% (feasible) for the aspect of manipulating software, 80.58% (feasible) for the aspect of learning design, and 78.17% (feasible) for the aspect of visual communication. In addition, this website is feasible to use according to prospective physics teachers, and an average percentage of feasibility characterizes it at 82.23% (very feasible). It is hoped that the Canva website innovation on Elastasis and Hooke's Law material can help teachers integrate technology in education.

Keywords: *Canva, Elasticity, Hooke's Law, Learning Media, and Website*

Abstrak

Penelitian ini mengembangkan media pembelajaran fisika berbasis website Canva untuk materi Elastisitas dan Hukum Hooke. Penelitian berfokus pada upaya memperkenalkan dan memanfaatkan situs web Canva versi gratis sebagai media pembelajaran interaktif guru di kelas. Kepraktisan situs ini membuatnya mudah diakses oleh semua orang dan memiliki jangkauan yang cukup luas. Dengan menggunakan metode penelitian *Research and Development* (R & D), peneliti menggunakan model penelitian 4-D yang terdiri dari meliputi pendefinisian, perancangan, pengembangan, dan penyebaran produk kepada calon guru fisika guna menilai kelayakannya. Hasil kelayakan yang diperoleh menunjukkan sekitar 78,94% (layak) untuk aspek memanipulasi perangkat lunak, 80,58% (layak) untuk aspek desain pembelajaran, dan 78,17% (layak) untuk aspek komunikasi visual. Selain itu, website ini layak digunakan menurut calon guru fisika ditandai dengan rata-rata persentase kelayakan berada pada 82,23% (sangat layak). Diharapkan inovasi website Canva pada materi Elastistas dan Hukum Hooke dapat membantu guru dalam mengintegrasikan teknologi dalam dunia pendidikan.

Kata kunci: Canva, Elastisitas, Hukum Hooke, Media Pembelajaran, dan *Website*

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INTRODUCTION

The increased development of technology impacts various aspects of life, including the field of education. It cannot be denied that technology plays a crucial role in improving the effectiveness of the teaching and learning process (Haleem et al., 2022; Norpin et al., 2024; Ruswan et al., 2024). Teachers must be skilled in integrating technology into teaching, including developing interesting teaching materials. Creative teachers can create materials to make students' learning experience more interesting and enjoyable (Inayatulloh et al., 2023). Using monotonous content and relying heavily on books tends to make students feel bored during the learning process (Rahma et al., 2024). With the development of technology dominating the current era, the skills to master and integrate technology into the learning process are important for teachers.

PowerPoint is one of the technologies that teachers often use as learning media in schools. However, its use is generally limited to the animations or images in the application (Karina et al., 2019), which can result in the discussion becoming monotonous, resulting in a decrease in student engagement and motivation (Herayanti et al., 2017). In the 21st century, teachers serve as facilitators in the classroom (Mardiana et al., 2024), and focuses more on using a learner-centered method (Kerimbayev et al., 2023). Hence, teachers and students require the use of interactive learning media that can increase students' motivation (Zain & Pratiwi, 2021), while creating an effective and interesting learning experience (Rahmat, 2015).

One of the more recent types of learning media that can be used by an educator is website-based learning media. A website is a collection of electronic pages that is summarized in a domain or subdomain in the World Wide Web (WWW) (Muharam & Persada, 2020). Various websites are used to obtain useful information such as, but not limited to, texts, graphics, images, photos, and audio (Syaiful et al., 2014). The series of webpages can only be accessed through the use of a browser software (Agustin et al., 2021). Education websites contain a digital container containing different media forms, but not limited to shapes, text, images, video, and animations as a source of learning content. Furthermore, websites have an advantage in creating an active learning environment for both teachers and students (Ayu et al., 2021).

Many existing studies provide an overview of Canva sites that can be used as learning media. The site is easy to use and has a wide variety of learning media available in the form of modules, flipbooks, and posters that can increase student motivation, science literacy and improve student education (Citradevi, 2023). In addition, Canva can be used to develop, create, and publish interactive websites for free and pay for additional premium elements. However, for full and paid features, users must have a data plan for users to connect or join as members (Pelangi, 2020). In contrast to previous studies that generally only highlight the use of Canva by teachers during learning. The novelty in this study lies in providing a complete reference along with an overview of the Canva website that teachers can use to teach Elasticity and Hooke's Law material more interactively.

The study aims to develop a website-based learning media using the Canva website application, which can be used by teachers in teaching physics in class. The content of the websites will revolve around the materials' Elasticity and Hooke's Law, and it is expected to initiate a two-way interaction between teachers and students, where students can access the website online. Its convenience and low cost lift the title, "Interactive Learning Media Based Development," and is expected for the Canva website as a way for an educator to develop an interactive learning medium in class. Its convenience and low-cost help the Canva website as a way for an educator to develop an interactive learning medium in class.

METHOD

This study uses a method based on R&D (Research and Development) to produce a product and test its effectiveness. Basic research, one type of research in R&D, is used to obtain information about the needs of use (needs assessment), before proceeding with development to produce a product.

Researchers adapted the 4-D design model, which can be interpreted as an effort to present and improve the product (Muqdamien et al., 2021). The 4-D model consists of 4 main stages, namely Define, Design, Develop, and Disseminate (Arkadiantika et al., 2020). This model was chosen because it is simple and systematic, making it suitable for use as a learning tool (Amali et al., 2019). Unfortunately, this research only reached the development stage due to time constraints. Meanwhile, at the dissemination stage, a questionnaire that will be distributed to prospective physics teachers along with website learning media has been made. However, the questionnaire has not been distributed to the research participants concerned.

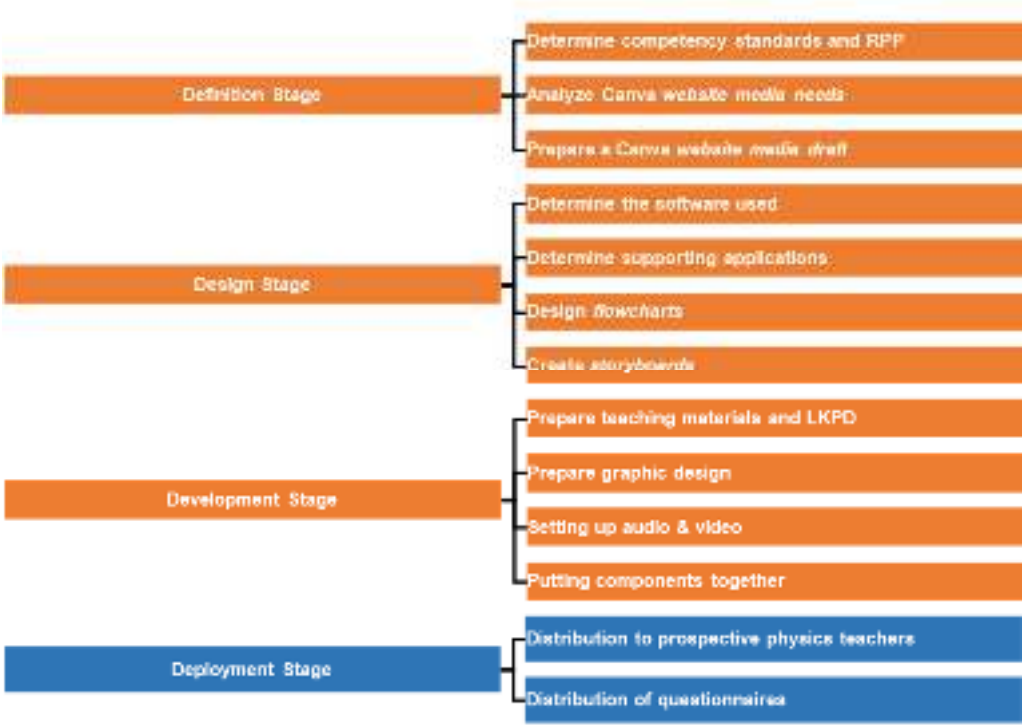

Figure 1 . 4-D research and development procedures

In the defining stage, researchers determine and define the needs of students in the learning process and collect various information related to the product to be developed. This stage consists of three main steps: (1) determining competency standards and lesson plans, (2) analyzing the needs of Canva website media, and (3) drafting Canva website media. This website will be intended for prospective physics teachers and physics teachers to teach Elasticity and Hooke's Law material at school. Students are expected to be more interested in this material because it uses more interactive media.

The design stage aims to design the website learning media that will be used by designing a prototype using the Canva website. This stage consists of four main steps: determining software, determining supporting applications, designing flowcharts, and designing storyboards. At this stage, the researcher designs the material according to the learning object and collects references that discuss “Elasticity and Hooke's Law”. This topic was chosen to add insight, reduce misconceptions, and increase interest and motivation in learning for grade XI students. A material map was also created that adapts to the developed learning object. This helps the discussion to stay focused on the objectives and prevents the discussion from being too broad.

The development stage aims to develop the Canva website from the data obtained. In this stage, researchers focus on preparing each component that will be included in producing a learning media. The preparation of material text, graphic design, and production of audio and video-supporting learning media are carried out to combine and develop a learning media product. The stages in making learning media products are carried out using the Canva website as the main software. They are supported by

the use of other applications, such as FlipHTML5, Google Drive, JotForm, Nearpod, PhET, and YouTube.

Finally, the deployment stage aims to distribute and promote the website to individual users, groups, and/or systems. This stage can help in getting feedback, corrections, suggestions, and reviews to further improve the product. At this stage, the learning media was disseminated to 19 physics teacher candidates and one supervisor. Student physics teacher candidates and physics lecturers act as validators of the learning media developed. Student physics teacher candidates were chosen because they can position themselves as teachers in the classroom and consider that the existence of learning media, especially in the form of websites, can help the teaching and learning process in the classroom. Input from prospective physics teachers was analyzed and put into categories. Asyhari & Silvia stated that data analysis can be done by obtaining an average score marked with a five-scale category, namely very worthy (5), worthy (4), decent enough (3), less worthy (2), not feasible (1) (Asyhari & Silvia, 2016).The scores obtained are then converted into five-scale qualitative data (interval data), which can be seen in Table 1 (Ashhari & Silvia, 2016).

Table 1. Adaptation media validation score conversion

Perception Interval (%)	Category
81-100	Very worthy
61-80	Worthy
41-60	Decent enough
21-40	Less Worthy
≤ 20	Not Feasible

RESULTS AND DISCUSSION

This research has developed interactive learning media that can be used by prospective physics teachers. The designed Canva website can be seen in Figure 2. The design process using Canva is very simple because it can be accessed easily via mobile phone. This makes it practical, and it can be used anytime and anywhere. Various supporting media are used on the website, such as FlipHTML5, Google Drive, JotForm, Nearpod, PhET, and YouTube (Figure 3). In designing learning media, researchers make a needs analysis that refers to the material, syllabus, learner requirements, and also the learning steps to be designed so that the content of the material presented can ensure answers.

Figure 2. Appearance of the designed Canva website

(a) Elasticity of Spring (b) Elasticity and Hooke's Law (c) Hooke's Law Problem and Discussion

Figure 3. Youtube QR code reference

The evaluated aspects consist of three aspects, namely, software engineering, learning design, and visual communication. Based on the results from Figure 4, the results obtained are around 78.94% with a worthy category for software engineering aspects, 80.58% with a worthy category for learning design aspects, and 78.17% with a worthy category for visual communication aspects. In addition, the average percentage of feasibility obtained is around 79.23% with a worthy category.

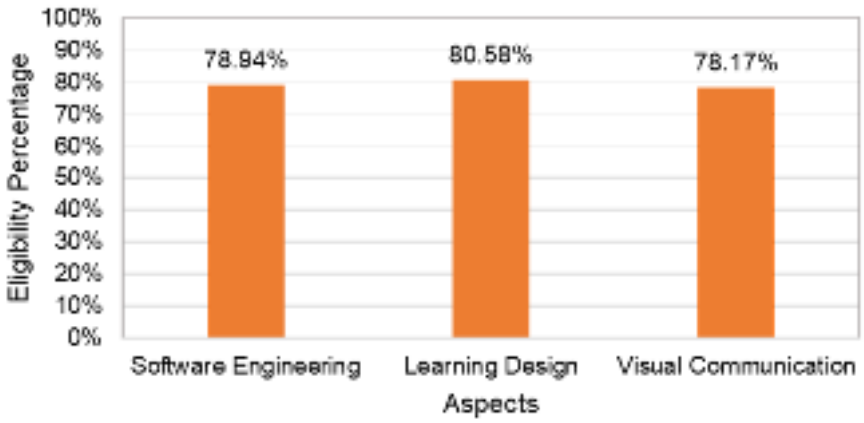

Figure 4. Canva Website Eligibility Percentage

The assessment was conducted by physics lecturers and prospective physics teachers. Prospective physics teachers were chosen as validators because they have studied this material and plan to use it as teaching material in the future, so it is considered relevant to assess the feasibility of its content. Based on the data analysis of the feasibility of physics teacher candidates, the learning design aspect occupies the highest average percentage, namely 80.58%, with a worthy category. This underlines the importance of learning design in supporting the success of the teaching and learning process. Learning design plays a role in presenting material in an interesting, relevant, and easily understood by students (Nurfatuhiyah, 2017). Its main components include the selection of effective delivery methods, the development of interactive content, and the suitability of the material to the curriculum objectives.

The software engineering and visual communication aspects recorded an average score of 78.94% and 78.17% respectively, which also falls into the worthy category. This percentage is slightly lower because Canva is designed as a simple and easy-to-use tool, so teachers do not need high technical expertise to create learning media. The built-in templates help teachers focus more on developing learning content without being hampered by technical aspects (Sugiarni et al., 2024). Overall, Canva-based learning media has an average feasibility of 79.23% with a worthy category. Thus, Canva-based interactive learning media for Elasticity and Hooke's Law material is declared worthy to be used by

prospective physics teachers.

Despite its many advantages, there are some weaknesses in this website that need to be improved. The navigation system that uses the scroll method to move between pages is different from most other websites, so it can be confusing for users. To overcome this, we have added home buttons and hyperlinks in each menu so that users can easily move to the desired page with just one click. Also, this website does not support mobile devices and is recommended to be accessed via laptop. This weakness is an important note for future improvement to make the learning media more flexible and accessible.

The advantage of this media are also able to present abstract physics concepts in a more interesting way through a combination of visual elements such as graphics, animation and interactive features. With this presentation, students can more easily understand elasticity, including Hooke's law and modulus of elasticity, compared to traditional learning methods. Easy access through electronic devices makes this media flexible to be used anytime, both for independent and collaborative learning (Muhajir et al., 2024). Through a contextualized approach, students can understand the connection of elasticity material to real applications such as engineering and construction, which ultimately increases their learning motivation. In addition, Canva allows teachers to design creative and innovative learning media, thus creating a modern teaching method that is in line with technological developments and current needs (Firdayanti et al., 2024).

CONCLUSION

Based on the results obtained from using the website as a learning material in teaching physics, the researcher concluded that Canva can be used as a medium in developing and creating educational websites. The results of the analysis of the percentage of feasibility of the Canva website show about 78.94% in the aspect of software engineering, 80.58% in the aspect of learning design and 78.17% in the aspect of visual communication, all of which are categorized as worthy. In addition, an average of 79.23% was obtained from the overall percentage of website feasibility which was categorized as worthy. These results show that Canva website can be a solution in assisting teachers in implementing interactive learning media in the classroom. In addition, the practical use of the Canva website is an excellent innovation for an educator in creating and designing a small-scale website. The limitation of this study lies in the testing stage which only includes content validity by prospective physics teachers, without testing the effectiveness of its use directly in the school environment. Therefore, it is expected that further research can explore the application of Canva in physics learning in the classroom to obtain a more comprehensive picture.

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