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Article

Plosa Development: Integrating Canva and SAC to Improve Understanding of Simple Machines Concepts

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ABSTRACT

In the ever-evolving digital era, the need for innovative and interesting learning methods is increasingly urgent. Interactive learning media is an effective solution to face this challenge, by offering a more dynamic and enjoyable learning experience. This research aims to improve the understanding of the concept of simple machines through interactive learning media with the R&D method. The validity results were calculated as percentages and analyzed descriptively. The results showed that the validity of the material and language reached 100% with the very good category, the design 93.75% with the very good category, and the media and technology 75% with the good category. The validity results show the highest percentages, namely materials, language, and design, while the lowest percentages are media and technology. Overall, the results of this study show that PLOSA has strong validity to proceed to the next stage. This research shows that the integration of Canva and SAC can create more visually appealing, interactive, and tailored learning media to students' needs.

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INTRODUCTION

The rapidly evolving digital era has increased the need for innovative and engaging learning methods. The learning method is adjusted to the needs and development of students. This is in line with the rapid development of Science and Technology (IPTEK) which causes teachers to face difficulties in conveying facts and concepts that have been mastered. According to Octafiana (2018), there are many reasons to use technology, such as efficiency, effectiveness, and convenience. Current technological developments also have an impact on teacher performance. It is hoped that teachers in the 21st century have the ability to innovate and be creative to adapt to the development of the times (Hidayat, et al., 2021). In addition, understanding students' concepts in the learning process is also a challenge for teachers.

Concept understanding consists of two words, namely understanding and concept. According to Susanto, comprehension is the ability to interpret or draw conclusions from tables, data, graphs, and so on, as well as explain a situation in different words. In addition, according to Mulyasa, understanding is the cognitive and affective depth that a person has. Meanwhile, Trianto defines a concept as the content of a lesson in the form of definitions, limitations, or meanings of abstract and concrete objects. Furthermore, according to Effendi, a

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concept is a generalization of a certain phenomenon that can be applied to represent various similar phenomena (Syafa'atun & Nurlaela, 2022). Concept understanding is the ability of students to construct meaning in their own language from the message conveyed through the learning process (Istiqamah et al., 2019). Understanding concepts is very important to do in learning because it can affect the learning outcomes of students. One of them is in simple machines materials. The use of invariable teaching methods and dependence on textbooks can cause boredom and lack of interest in learning students, resulting in a low understanding of concepts. These problems can be overcome by using interactive learning media so that students do not easily feel bored during learning.

Learning media plays a very important role in the learning process. Learning media as an educational tool can help teachers in expanding students' horizons. The use of varied learning media allows teachers to convey subject matter in a more interesting and easy-to-understand way for students. In addition, the use of learning media can increase students' interest in learning new things. It is important for educators to choose the right and appropriate learning media to achieve the learning goals that have been set by the school. Interactive media in learning can be defined as everything related to software and hardware that is used as an intermediary to deliver lessons to learners. In addition, interactive learning media can also provide feedback to its users. Therefore, the use of interactive media in learning can improve the learning experience and produce better results (Romadhoni, et al., 2023). Developing learning media applications using canva and SAC (Smart Apps Creator) is one example of interactive learning media.

One of the applications that teachers can use to create interactive learning media is Canva. Canva is an online design application, which offers a wide variety of attractive designs (Wulandari & Mudinillah, 2022). The Canva application as a learning medium can increase teachers' creativity to create various learning tools, making it easier for students to learn and understand the theories taught (Setiani, et al, 2024). In this development, Canva is used to create attractive and relevant designs for simple airplane materials, which require the realization or examples of images that are suitable for daily life so that they are easy for students to understand. *Smart apps creator*, later abbreviated as SAC, is a desktop application to create Android-based learning media and others without the help of programming code (Surikno & Wahyuni, 2023). This application is free and can be accessed anytime and anywhere using devices, such as Smartphones, Laptops, and Tablets (Amelia & Iklimatuzzahra, 2024). This development uses SAC as a forum to create applications by compiling the design results that have been created using Canva according to the learning sequence. The advantage of this application is the ability to overcome student comprehension problems. The media allows students to learn and use it independently and easily. Especially in the field of science on simple machines materials, of course, visual media such as images and videos are needed to provide a communicative experience.

Therefore, without learning media that can visualize the material being studied, teachers cannot convey science learning optimally. Learning applications can help students understand simple machines material by presenting concepts in a format that is easy to understand and remember. The application makes learning more interesting and effective, and allows students to understand and remember the necessary information more easily (Romadhoni, et al., 2023). Based on these several things, an application was developed as an interactive learning medium by integrating Canva and SAC which is interesting and in accordance with the material and needs of students named Plosa. The purpose of this study is to find out the level of validity of this application as well as to improve students' understanding of simple machines materials.

METHODS

This research uses the Research and Development (R&D) method. Emphasis on the development of application-based learning media, namely Plosa, which integrates Canva and SAC (Smart Apps Creator) to improve students' understanding of the concept of simple machines. According to Sukmadinata 2008 (in Siregar, 2023) research and development (R&D) is a research process that aims to create new products or improve existing products. The resulting products can be in the form of software or hardware, such as data processing programs, classroom learning, libraries, laboratories, or educational models, training, guidance, evaluation, management, and so on. This research procedure uses a questionnaire technique with data analysis that refers to the Borg and Gall development model. This stage of the process is usually referred to as the R&D cycle. However, the stage carried out in this research is only up to the validation stage to meet development needs. The needs of the researcher determine the application of the procedures used without compromising the value of research and development. This process was simplified into four stages, due to the researcher's time limitations.

This research goes through several stages, namely: 1) Research and information collection, by conducting a literature review of the problem being researched. One of the problems for teachers in the learning process is the need for innovative, creative, and interesting learning approaches in understanding the concept of simple machines materials. 2) Planning, by formulating the goals that must be achieved by the developed media. This stage compiles the media design, done by looking for elements such as images, music, backgrounds, material content, and practice questions. All the needs of the material elements are collected according to the purpose and needs in creating the application. 3) Develop the initial shape of the product, using the Canva app to modify elements to make them more interesting, interactive, and as needed. Then the Smart Apps Creator (SAC) app is used to combine all the components of Canva's design into a single unit. 4) Validation by the Lecturer of the Department of Science Tadris IAIN Ponorogo by filling out a questionnaire that contains aspects of material, technology, design, media, and language suitability. The validation data is calculated in the form of a percentage using the formula according to Purwanto, 2014 (in Nurholipah et al., 2023) in Table 1. The results of the calculation are used to determine the eligibility level criteria based on Noer 2021 (in Susilo et al., 2023) in table 2, as well as to find out the highest and lowest validation results.

Table 1. Percentage Formula

$NP = \frac{R}{SM} \times 100\%$
Information: NP : Percentage value obtained R : Score obtained SM : Maximum score value 100% : Fixed number

Table 2. Product eligibility criteria

Percentage Interval (%)	Category
81-100	Highly Worthy
61-80	Proper
41-60	Quite Decent
21-40	Less Worthy
0-20	Not Eligible

RESULTS AND DISCUSSION

The integration of Canva and SAC has great potential to create a more interactive and engaging learning experience. Canva provides a variety of features, such as templates and design elements that allow users to design attractive visual displays for learning materials (Khaeruddin et al, 2021). High-quality image elements, icons, and illustrations that can be used directly in the design. There's even a real-time collaboration feature that allows users to work together with a team on a single design. Meanwhile, SAC (Smart Apps Creator) as an app development platform, allows us to combine designs from Canva into a more dynamic learning application. With this integration, students can actively participate in the learning process through interactive quizzes, simulations, and animated videos, all of which are created with attractive designs. In the ever-evolving world of education, efficiency and creativity are key. Canva and SAC integration allows educators to produce quality learning materials more efficiently.

Canva provides a variety of templates that are easy to customize, while SAC makes it easy to develop apps without the need for complicated coding skills (Mussanadah & Jannah, 2022). Applications built in SAC can be deployed for multiple platforms, including Android, iOS, and Windows, without the need to customize code for each platform. SAC has a feature to test applications directly, so users can see their designs on real devices before performing the final process. Thus, educators can focus more on learning content and pedagogical innovation, without being burdened by the technicalities of media creation. The integration between Canva and SAC brings new opportunities in app development in the field of education. The compelling visual designs produced by Canva can be easily integrated into applications built with SAC. This allows developers to create applications that are not only functional, but also aesthetically pleasing and appealing to users (Paramitha, 2023).

The Plosa application that has been developed by researchers has interesting features and there are differences from other applications. The features in the Plosa application include application menus, material menus, related info, learning videos, evaluations, and researcher profiles. The difference between the features in the Plosa application and other applications is the related info menu, which contains information in daily life related to the material in the application. In the evaluation feature, two fun evaluation models are provided. In addition, the advantage of the Plosa application is that students do not need to leave the application when using it. The point is that when watching videos or doing evaluations, students will not be led out of the application and move to another application. The Plosa application uses a vertical design which makes the design more minimalist and concise. In addition to explaining the material, the Plosa application also has relevant pictures and sample questions that can be helpful for students to understand the formula explained. The Plosa app has a bright feel and has excellent image quality and icons with excellent resolution.

Figure 1. App home view

Figure 1. App menu display

Figure 1 shows the initial display of the Plosa application, there is a get started icon to go to the main menu of the application. There is a mute button in the upper left corner, which allows users to control the audio. The background looks interesting because there are examples of applications in daily life related to simple machines, such as bicycles and seesaws. Meanwhile, Figure 2 is the display of the main menu of the Plosa application, there is a menu of materials, learning videos, evaluations, and researcher profiles. The icons are well-chosen and each icon visually represents the function it represents. For example, the book icon and the light bulb for Evaluation indicate an assessment or knowledge check. The use of green abstract colors and shapes in the corners adds visual appeal without interrupting the main content. There are also back and next buttons in the bottom corner, which are useful for quick navigation. These buttons also have the right size and color, making them easy to find and add to the aesthetics.

Figure 2. Material menu display

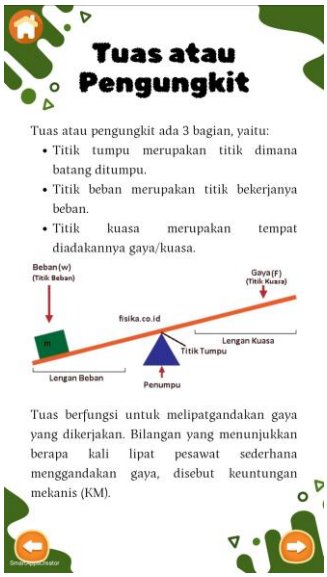

Figure 3. Material display

Figure 3 is the display of the material menu on the Plosa application. The icon layout is neat and attractive, with each icon representing a related concept. Like the lever indicated by the wheelbarrow, the axled wheel with a bicycle icon makes it easy for users to understand the concept visually. Figure 4 shows the display of the material on a lever or lever. The use of

graphic elements that depict the parts of the lever, makes the concept conveyed easier to understand. The language used for the material is clear and easy for users to understand. Overall the appearance of the Plosa app is quite informative and well-designed for educational applications. The vibrant visuals and interactive elements make it both engaging and educational.

Based on the data presented in table 3 related to the development of the Plosa application, it shows the results of validation by experts. The material aspect and language suitability in the Plosa application reached 100% which is included in the very feasible category. The design aspect, which assesses the interface and visual beauty of the Plosa app, reaches a percentage of 93.75% which belongs to the very decent category. There are media and technology aspects reaching 75% and are included in the feasible category. There are suggestions from experts, namely multimedia and interactivity features to be further optimized so that the student learning experience can take place more effectively. Based on the validation results, the highest percentage and also the lowest percentage were obtained.

Table 3. Validation results

NO	Aspects	Percentage	Category
1	Materials and Language Compatibility	100%	Very worthy
2	Design	93,75%	Very worthy
3	Media	75%	Proper
4	Technology	75%	Proper

The highest percentage was obtained in the material aspect and language suitability with a percentage of 100%, the language suitability aspect with a percentage of 100%, and the design aspect with a percentage of 93.75%. While the lowest percentage is found in the media and technology aspects with a percentage of 75% each. Learning materials are the knowledge, skills, and attitudes that students need to acquire to achieve the specified proficiency standards. An important factor in the selection of materials is the type, scope, sequence and method of use of the material (Syahputra, 2022). The Plosa application in the material aspect got a perfect percentage of 100%, showing that the content presented in the application is not only in accordance with the curriculum but also relevant and in accordance with the learning objectives. Simplifying learning materials and designing more interesting learning experiences make changes to students based on the feedback provided by students (Pratama, et al., 2023). The material contained in this application has been associated with the daily life of students and has been included with examples of images that are in accordance with the material, so that it is easy for students to understand. With this connection to daily life, this application can help provide students with an understanding of simple machines materials and can increase students' motivation to implement it in real life (Fitriah & Irawan, 2021).

Language suitability is a paragraph that refers to the accuracy of word choice, sentence structure, and tone of voice, so that the text can be read clearly by the reader. This adaptation includes choosing the right words according to the context, using logical and effective sentence structures, and adapting the tone of the language to the intended literary purpose and reader. In other words, the language used must be in accordance with the topic being discussed, the level of formality required, and the characteristics of the reader (Triningsih, 2021). The language suitability in the Plosa application is considered very feasible by experts. This can be seen from the language that is clear, easy to understand, interesting and in accordance with the level of ability of the students. This application uses a language that has been adapted to junior high school/MTs students. The selection and adjustment of the right language to the student's character will greatly affect students' understanding of the learning material and learning atmosphere, especially in simple airplane materials that require examples of implementation around students (Purnamawanti, et al., 2023). The Plosa application is not only informative but

also communicative in conveying the concept of a simple plane so that students can learn independently, reflectively and interactively through the activities in the application. Grammar and spelling in this application are also very careful and there are no errors in writing words or sentences. Providing a forum for students to be able to learn independently and interactively can increase students' understanding (Amalia, et al., 2022).

Application design is the process of planning, creating, and developing the user interface and user experience of an application that is creative and systematic. This process includes many steps, from deeply understanding the user's needs, determining the app's goals to choosing the right visual elements, interactions, and functions. App design is not limited to how it looks, but how users interact with the app in a thoughtful and effective way. App designers consider things like compatibility, simplicity, and accessibility to create a flawless user experience. In short, application design is a bridge between technology and humans, with the goal of producing applications that are not only functional, but also fun and easy to use (Mahardika, et al., 2021). Graphic design is key to creating engaging and unique learning materials. Canva is an easy-to-use online graphic design platform for developing engaging and interactive teaching materials to meet the needs of the curriculum and academic advancement (Pratama, et al, 2023).

The design of the app created using Canva has managed to captivate experts, with a clean layout, matching color combinations, and graphics that support a simple understanding of the concept of an airplane. The design used makes the appearance of the application more attractive, as well as helping students focus more on the learning material, increasing their engagement and desire to learn (Wulandari & Mudinillah, 2022).. With images and videos in this learning application, it will clarify information and make the content of the material more interesting. The color proportion, the suitability of the back sound, and the selection of the material background will greatly affect the learning experience of students (Susilo, et al., 2023). Interactive learning media in the form of the Plosa application can improve students' understanding, practice mathematical representations, and make learning more interesting with animations and audio that are relevant to the material (Chairunnisa, 2023).

Interactive media is a form of communication that allows two-way interaction between users and the content presented. Unlike traditional media that is passive, interactive media invites users to be actively involved in the process of conveying information. Users not only receive information in one direction, but can also respond, choose a storyline, or even change the appearance of the content according to their preferences. Interactive media utilizes digital technology to create a more dynamic and personalized experience for each user. Examples of interactive media that we often encounter are video games, interactive learning apps, websites that allow users to leave comments or ratings, as well as various types of virtual simulations. In short, interactive media is a bridge between the digital world and users, which allows for more in-depth dialogue and collaboration (Triningsih, 2021). The development of interactive media in the form of this application received the lowest validation in the media and technology aspects, with a percentage of 75% each. Although this percentage is relatively low compared to other aspects, the Plosa application is still considered quite good in the use of appropriate media and technology for learning.

The media aspect is relatively low due to the interactivity of the application which only displays static images and text. The difficulty level of the questions is still relatively easy for simple machines materials. According to Winarno, 2009 (in Nofitasari et al., 2021), the assessment criteria for learning media include interfaces related to media display, navigation related to moving from one page to another, pedagogy that includes user interactivity and control, and robustness related to product durability. In-app interactivity usually allows students to conduct virtual experiments or simulations, so they can understand concepts through hands-on trials. This application only displays static media, so students lose the

opportunity to test theories directly and have an impact on students' lack of understanding. The level of difficulty of the questions needs to be developed, and it is necessary to improve the questions on the quizzes to be more varied and interesting to motivate students' enthusiasm for learning. Variations in the delivery of material, including varied questions, can encourage students to be more active and motivated in learning science. Students will be happy to find and solve science problems (Septanti, 2015).

Learning technology is learning that combines learning theory with practice by using hardware and software to facilitate the learning process. This term is shortened to edutech. Its scope is very broad, ranging from the design and development of digital teaching tools, the use of various interactive media, and even the use of artificial intelligence in learning. The main goal of technology education is to create a better, more effective and engaging learning experience for students. In other words, technology education is a systematic effort to utilize the power of technology to improve the quality of education and achieve optimal learning objectives. It covers many aspects, from instructional theory, instructional design to instructional assessment. In short, educational technology is a bridge between the world of education and the world of technology that aims to enrich and modernize the way of learning (Rahmawati, et al, 2024). The technological aspect is also relatively low with a percentage of 75%.

The Plosa app was created by integrating Canva and SAC. While the use of SAC does make it easier to develop apps because there is no programming code and it is free, the responsiveness of the app is sometimes difficult. Especially with regards to the speed of loading and accessing the app. Users will feel annoyed if the app slows down or takes a long time to load content, which in turn hinders the learning process. So it will have an impact on the student learning process in improving understanding of the concept of simple machines. It is necessary to improve the technological aspects by reducing the file size accessed by the application. The use of efficient data compression techniques and caching can help speed up loading time and increase access speed. Experts provide suggestions to optimize the multimedia features in the Plosa application. Therefore, researchers make improvements and check in detail so that the application that will be used by students is really ready to use and according to the needs of students. By designing unique and well-organized learning media can affect the quality of teaching and learning in the classroom (Rahmawati & Nurafni, 2024). After making revisions to the learning application according to suggestions from experts, the learning application is considered to be able to improve students' understanding. It can be seen that learning media applications that integrate Canva with SAC can improve students' understanding of the concept of simple machines material (Jatmiko, et al, 2023).

CONCLUSION

Based on the results of research on the development of Plosa by integrating Canva and SAC (Smart Apps Creator) to improve understanding of simple machines concepts, the highest and lowest validation percentages were obtained. The highest percentage is the material and language aspects which reach 100%, and the design aspect with a percentage of 93.75%. While the lowest percentage is in the media and technology aspects with a percentage of 75%. Based on this data, the highest percentage is included in the very feasible category, and the lowest percentage is included in the feasible category. Overall, the results of this study show that Plosa has strong validity to continue to the next stage, but with improvements to aspects that are not yet appropriate. This research shows that the integration of Canva and SAC can create learning media that is more visually appealing, interactive, and in accordance with the needs of students.

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