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Developing an Interactive Digital Storybook Using Canva as a Mathematics Learning Medium in Elementary Schools

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ABSTRACT

Penelitian ini bertujuan untuk mengembangkan media pembelajaran berupa buku cerita digital berbasis Canva pada materi pengolahan data untuk siswa kelas IV SD Negeri 1 Rejotangan, serta menguji tingkat kevalidan dan kepraktisannya. Penelitian ini menggunakan model pengembangan ADDIE yang meliputi lima tahap: analisis, desain, pengembangan, implementasi, dan evaluasi. Data diperoleh melalui validasi oleh ahli media, materi, dan bahasa, serta angket respon guru dan siswa. Hasil penelitian menunjukkan bahwa media memiliki tingkat kevalidan sangat tinggi dengan skor validasi 94% (media), 82% (materi), dan 96% (bahasa). Uji kepraktisan menunjukkan bahwa media sangat praktis digunakan, dengan respon guru sebesar 95% dan siswa sebesar 93,5%. Dengan demikian, buku cerita digital berbasis Canva dinyatakan valid dan praktis sebagai media pembelajaran Matematika yang interaktif dan menarik bagi siswa sekolah dasar.

This study aims to develop a learning medium in the form of a Canva-based digital storybook on data processing material for fourth-grade students of SD Negeri 1 Rejotangan, and to assess its level of validity and practicality. This study uses the ADDIE development model, which includes five stages: analysis, design, development, implementation, and evaluation. Data were obtained through validation by media, material, and language experts, as well as teacher and student response questionnaires. The results showed that the media had a very high level of validity, with validation scores of 94% (media), 82% (material), and 96% (language). The practicality test demonstrated that the press was efficient to use, with a teacher response rate of 95% and a student response rate of 93.5%. Thus, the Canva-based digital storybook was deemed valid and practical as an interactive and engaging mathematics learning medium for elementary school students.

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INTRODUCTION

Mathematics is a fundamental subject in the basic education curriculum, serving to develop students' logical, critical, and creative thinking skills. Regulation of the Minister of National Education of the Republic of Indonesia Number 22 of 2006 states that every student is expected to possess logical and systematic competencies in the mathematics learning process at various levels of education. In practice, mathematics plays a crucial role in multiple aspects of life, including economics, technology, and science (Kamarullah, 2017).

However, in the classroom, students often struggle to understand mathematical concepts, primarily because the learning media used are still conventional. According to preliminary observations conducted in fourth-grade students at SD Negeri 1 Rejotangan, students demonstrated a lack of

enthusiasm for mathematics lessons due to the lack of innovative media that could engage their learning (Lailiyah, 2025). Teachers also stated that difficulty in engagingly presenting material was a contributing factor to students' low understanding of mathematics.

Learning media are any form of intermediary used in the learning process to effectively convey messages or information from the source to the recipient. Susilana and Riyana (2009) state that the word "media" originates from the Latin word "medium," meaning "intermediary." Schramm (1982) argues that the media encompasses various technologies used to convey learning messages. This is reinforced by Sujipto (2011), who states that the media can clarify the meaning of a message, allowing learning objectives to be achieved optimally.

One potential form of learning media is digital storybooks. Digital storybooks are an evolution of conventional storybooks, complemented by illustrations, animations, and interactive features, which are presented through digital devices such as laptops, tablets, or smartphones (Berutu et al., 2024). According to Septiani (2016), the use of illustrations in storybooks serves to attract students' attention and arouse interest in the reading content. Furthermore, Mantei and Kervin, in Syarifah (2024), added that storybooks provide an exploratory space for students to understand values through visual experiences.

The development of digital storybook learning media in this study used the Canva application. Canva is a web-based design platform that allows users to create various graphic materials practically and interactively. According to Wulandari and Muldinillah (2022), Canva makes it easy for teachers and students to design engaging and creative learning media. This aligns with research by Tanjung and Faliza (2019), which states that Canva supports technology-based learning, skills, and creativity.

Besides being practical, Canva also facilitates the creation of learning media with rich visual elements that are tailored to the characteristics of elementary school students. Arsyad (2019) emphasised that the selection of learning media should be based on suitability to learning objectives, relevance to the material being taught, and practicality for use in the classroom. Therefore, Canva-based digital storybooks are an ideal solution for enhancing the effectiveness of mathematics learning, particularly in data processing.

In mathematics learning, the use of interactive media is crucial for bridging the gap between students' understanding of abstract concepts. As Hudoyo (2003) noted, mathematics studies structures, patterns, and relationships, which require a systematic approach to their expression. Therefore, presenting material in the form of illustrated stories through digital media can help students understand concepts more concretely and in a contextualised manner.

Similar research conducted by Abdulatif Sofuan and Arifin Husen Muh showed that the development of digital storybook media in social studies learning received very high validity scores from various experts, indicating that the media is feasible and effective for use in the learning process. Considering these results, the development of Canva-based digital storybooks for mathematics learning is expected to make a significant contribution to improving the quality of education.

Based on this background, this study aims to develop learning media in the form of Canva-based digital storybooks for data processing material for fourth-grade students at SD Negeri 1 Rejotangan. This study also seeks to assess the level of validity and practicality of the developed media, thereby providing students with more engaging, interactive, and meaningful learning experiences.

METHOD

This research is a type of research and development (R&D) that aims to produce a product in the form of learning media and test its feasibility and practicality in the field. The development model used in this study is the ADDIE model, which consists of five main stages: Analysis, Design, Development, Implementation, and Evaluation (Branch, 2009). This model was chosen because it is considered systematic and appropriate for the process of developing technology-based learning media.

Research Subjects

The subjects in this study were fourth-grade students at SD Negeri 1 Rejotangan, as well as the class teachers involved in the media validation and implementation process. Subject selection was based on initial observations that indicated problems in mathematics learning, particularly in data processing and analysis.

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Research Stages

In the analysis stage, the researcher conducted preliminary research through observations and interviews with fourth-grade teachers to identify the needs and complexities encountered in mathematics learning. The results indicated that students experienced difficulty understanding the material and were less interested in conventional learning.

The design stage involved developing an initial product design in the form of a Canva-based digital storybook. The story was structured based on the mathematics material from Chapter 6 on data processing, then designed using the Canva application and ChatGPT as a content development tool.

The development stage involved creating an initial product based on the developed design. The product was then validated by three experts: a media expert, a material expert, and a language expert. Validation was carried out using a validation sheet prepared based on specific indicators.

The implementation phase involves product trials with students in two stages: small group trials and large group trials. The trials aim to determine the product's response and practicality based on the perceptions of students and teachers regarding the learning media.

Finally, the evaluation phase is conducted to revise and refine the media based on expert input and the trial results. This evaluation is formative and conducted continuously at each stage of development to ensure that the resulting product truly meets learning needs.

Data Collection Instruments and Techniques

The data collection techniques in this study used a validation sheet and a questionnaire. The validation sheet was used by media, materials, and language experts to assess the product's validity aspects. The questionnaire was used to obtain practicality data from teacher and student responses after using the media. The instrument was structured based on a grid that refers to validity and practicality standards in learning media development.

Data Analysis Techniques

The validation and practicality data were analyzed quantitatively using a percentage formula. The criteria used to determine the level of validity and practicality refer to predetermined score interpretations: very valid (81–100%), valid (61–80%), reasonably valid (41–60%), less valid (21–40%), and invalid (0–20%). The percentage results were then used as the basis for decision-making regarding the product's feasibility.

RESULTS AND DISCUSSION

This research aims to develop a Canva-based digital storybook for fourth-grade elementary school Mathematics and test its validity and practicality. The development process followed the five-stage ADDIE model, beginning with needs analysis, followed by media design, development, implementation, and evaluation.

Needs Analysis Results

The needs analysis was conducted through observations and interviews with fourth-grade teachers at SD Negeri 1 Rejotangan. It was found that students experienced difficulties understanding the Mathematics material, particularly in Chapter 6 on data processing. Teachers also stated that the learning media used lacked variety and were unable to optimally capture students' attention. This situation underscores the need for developing innovative digital-based media.

Product Development Results

The developed media is a digital storybook designed using Canva with story content tailored to the Mathematics material. This media includes characters, a storyline, illustrations, quiz questions, and interactive elements tailored to the characteristics of elementary school students. The images used are adapted to the data processing topic, such as bar graphs and pictograms.

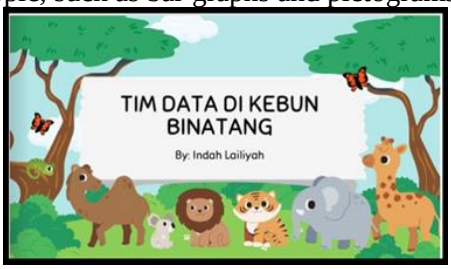

Figure 1. Storybook View

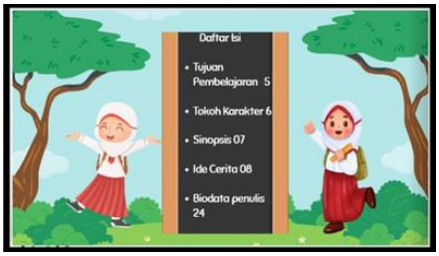

Figure 2. Storybook Table of Contents View

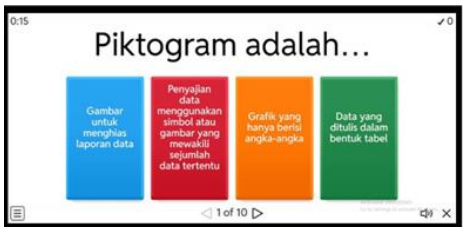

Figure 3. Quiz Question Image Display

Validation Test Results

The product was validated by three experts: a media expert, a material expert, and a language expert. The validation results indicated that the media was highly valid. The media expert's validation scored 94%, the material expert's score 82%, and the language expert's validation 96%. Based on the interpretation category, all validation results fell into the "highly valid" category, indicating that the media was appropriate in terms of technical aspects, content substance, and language.

Practicality Test Results

To determine the level of practicality, the media was piloted with students in two stages: small groups and large groups. Respondents in the small group gave a practicality score of 93.5%, while those in the large group gave a practicality score of 95%. These figures indicate that the media is straightforward, engaging, and helpful in understanding the material.

Teachers, as users, also gave very high ratings, with a score of 95% in the field trial. This indicates that the media is highly suitable for use in learning activities.

Discussion

The development results indicate that the Canva-based digital storybook is highly valid and practical for use in mathematics learning. This media effectively addresses the problem of low student interest and understanding in mathematics, primarily because it is tailored to the characteristics of elementary school students and presented engagingly.

These findings align with the opinion of Shoffa et al. (2023), who stated that interactive learning media can increase student enthusiasm for learning and help teachers deliver material effectively. Furthermore, using Canva as a development platform provides convenience and ease in creating visual and contextual materials (Wulandari & Muldinillah, 2022).

Digital storybooks have also been shown to enrich the learning process by presenting material in engaging stories and images. This aligns with the opinion of Mantei & Kervin in Syarifah (2024), who stated that digital storybooks provide an exploratory space for students to understand learning values and information in a fun way.

Therefore, the development of Canva-based digital storybooks can be an alternative solution to address challenges in mathematics learning in elementary schools.

CONCLUSION

Based on the research and development results, it can be concluded that the Canva-based digital storybook media for fourth-grade Mathematics, Chapter 6, at SD Negeri 1 Rejotangan is highly valid and practical. This is evidenced by the media expert validation results of 94%, material expert validation of 82%, and language expert validation of 96%, all of which fall into the "very valid" category. Furthermore, the media's practicality was also highly rated by students and teachers, with percentages of 93.5% and 95%, respectively. This media has proven effective in increasing learning interest and facilitating student understanding of data processing materials. The use of Canva enables the

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presentation of engaging, interactive learning media that is tailored to the characteristics of elementary school students.

Based on the research findings, the researcher recommends that teachers be more active and creative in developing technology-based learning media, particularly digitally accessible media such as Canva-based digital storybooks. The use of media like this can be a solution to overcome student boredom in learning, while simultaneously increasing the effectiveness of material delivery. This research is also expected to serve as a reference for future researchers who wish to develop similar media, both in different subjects and at other educational levels. A limitation of this study is that the product testing was conducted on a limited scale; therefore, further trials are needed for broader implementation to generalize the results.

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