## ORIGINAL



# Design of Digital Book of Pancasila Education Based on Culturally Responsive Teaching (CRT) Using Flip PDF Professional Software

# El diseño de un prototipo de libro digital para la educación Pancasila basado en la enseñanza culturalmente receptiva (CRT) utiliza el software Flip PDF Professional

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## ABSTRACT

**Introduction:** the development of digital learning emphasizes the need for culturally relevant and engaging materials.

**Objective:** this study aims to design and evaluate a digital book prototype for Pancasila Education.

**Method:** a descriptive qualitative method was used, applying the Culturally Responsive Teaching (CRT) approach to create engaging and culturally relevant materials. The digital book prototype was developed with Flip PDF Professional software, chosen for its interactive and user-friendly features.

**Results:** the feasibility of the digital book prototype was evaluated by expert validators specializing in educational media and Pancasila Education content. Key aspects such as readability, interactivity, and curriculum alignment were assessed. The findings confirm that the prototype meets the required standards for effective instructional materials and demonstrates significant potential for enhancing elementary-level Pancasila Education.

**Conclusions:** the study shows that integrating the CRT approach with Flip PDF Professional creates an engaging and culturally relevant digital book. This resource effectively supports better Pancasila Education by enhancing student engagement and cultural connection.

**Keywords:** Digital Book Design; Culturally Responsive Teaching (CRT); Flip PDF Professional; Pancasila Education.

## RESUMEN

**Introducción:** el crecimiento de los recursos de aprendizaje digitales resalta la necesidad de materiales relevantes y atractivos.

Objetivo: Este estudio diseña y evalúa un prototipo de libro digital para la educación Pancasila.

**Método:** se utilizó un método cualitativo descriptivo con el enfoque de Enseñanza Culturalmente Responsiva (CRT). El libro digital fue desarrollado con Flip PDF Professional, elegido por su interactividad y facilidad de uso.

**Resultados:** expertos evaluaron la viabilidad del libro digital, cumpliendo con criterios de legibilidad, interactividad y alineación curricular. El prototipo tiene un gran potencial para mejorar la educación primaria de Pancasila.

**Conclusiones:** la integración del enfoque CRT con Flip PDF Professional produce un libro digital atractivo y culturalmente relevante, que mejora la participación estudiantil y la conexión cultural en la educación Pancasila.

© 2025; Los autores. Este es un artículo en acceso abierto, distribuido bajo los términos de una licencia Creative Commons (https:// creativecommons.org/licenses/by/4.0) que permite el uso, distribución y reproducción en cualquier medio siempre que la obra original sea correctamente citada **Palabras clave:** Diseño de Libros Digitales; Enseñanza Culturalmente Responsiva (CRT); Flip PDF Professional; Educación Pancasila.

#### **INTRODUCTION**

Pancasila education is an important foundation for the nation's noble character and values.<sup>(1)</sup> Through this subject, students are expected to be formed into good citizens. Pancasila education in elementary schools aims to provide students with basic knowledge and skills, and help them become citizens who adhere to Pancasila. However, the implementation of Pancasila education faces significant challenges in practice, particularly in adapting to the diverse cultural and educational needs of students across Indonesia.

One of the critical challenges is the overreliance on printed textbooks as the primary learning resource. These textbooks often present generalized material that lacks relevance to the local context and Indonesia's rich cultural diversity.<sup>(2)</sup> As a result, students frequently struggle to connect the material to their daily lives and experiences. Additionally, traditional textbooks tend to emphasize rote memorization of concepts and terminology rather than fostering critical thinking or the ability to analyze real-world social issues. This limitation undermines the transformative potential of Pancasila education in shaping well-rounded and socially aware individuals.<sup>(3)</sup>

The dominance of printed textbooks also contrasts sharply with the demands of 21st-century learning. Effective learning in the modern era requires media that align with students' developmental characteristics and the evolving digital landscape.<sup>(4)</sup> Based on Piaget's theory of cognitive development, elementary students are in the concrete operational phase. Thus, the media used needs to be concrete or real, so that students can understand the concept of the material comprehensively.<sup>(5)</sup> This underscores the need for innovative learning resources that go beyond static, text-heavy materials.

Another challenge lies in addressing the cultural disconnect in current learning materials. Pancasila education should ideally reflect Indonesia's cultural plurality to foster inclusivity and relevance. However, existing resources often fail to incorporate local cultural elements, making the learning experience less engaging and relatable for students from diverse backgrounds. This highlights the importance of a culturally responsive approach in educational content development.

Therefore, we need a learning media that empowers participants in learning. Teachers need to develop quality teaching strategies and skills to effectively incorporate learning technology into their instruction.<sup>(6)</sup> Nowadays, technological advances have implications for the development of learning media. Judging from the area of use learning technology, media can be used systematically for learning. Media use is a decision-making process based on learning design specifications that are linked to student characteristics.<sup>(7)</sup> This is in line with the Tuhuteru's opinion,<sup>(8)</sup> that media can develop sensory abilities and attract students' attention and interest, so that students' understanding abilities will be better.

In this regard, one of the media that can be used is CRT-based digital book media. A digital book is a publication consisting of text and other media presented in digital form, so that it can be read on a computer or other electronic device.<sup>(9)</sup> This is in line with the opinion of that digital books are published in digital form, and displayed in flipbook form.

One application for creating digital books is Flip PDF Professional. This application can be used to convert PDF digital page-flipping publications and makes it possible to create interactive learning content with several supporting features. The Flip PDF Professional application makes it easy to add various types of animated media to flipbooks. The digital book developed in this research is CRT-based. This is in line with the goal of education in the 21st century to form a young generation who is intelligent, and has character and responsibility. CRT-based digital books have the potential to overcome several challenges in learning Pancasila education.

This research seeks to overcome the limitations of using printed books in Pancasila Education, which tend to be static and do not reflect the diversity of Indonesian culture. Printed books generally present general and less contextual material, so students have difficulty relating the material to everyday experiences. By utilizing CRT-based digital books and Flip PDF Professional, this research is expected to provide innovative solutions to support Pancasila learning that is more relevant, interactive, and in line with the learning needs of elementary school students in the digital era.

There are several relevant studies, which show that the use of digital books can improve the quality of students' learning. A study conducted by Rosmana et al.<sup>(10)</sup> the use of interactive-based digital media in learning has succeeded in increasing student involvement and understanding of the material. Meanwhile, research by Ningrum, et al.<sup>(11)</sup> emphasizes the importance of developing learning media that can be accessed easily and is interesting for elementary school students. Flip PDF Professional-based digital books provide a solution in this case because they provide interactive features such as animations, videos, and quizzes that can increase the attractiveness and effectiveness of learning.<sup>(12)</sup>

In recent years, digital learning media has been increasingly used to improve the quality of education. One software that is often used is Flip PDF Professional, which allows the integration of various interactive elements such as animation, video, audio and practice questions in digital book format.<sup>(13)</sup> This application is considered effective for increasing student involvement, especially at the basic education level which is in the concrete operational development stage according to Piaget's theory. In addition, the Culturally Responsive Teaching (CRT) approach has been widely applied in education to present material that is more relevant to local culture, so that students feel more connected to the content being studied.<sup>(14)</sup> Studies show that the application of interactive digital media and the CRT approach can increase students' understanding and interest in learning.<sup>(10,11)</sup> This innovation combines Flip PDF Professional technology with a CRT approach, which has not been widely used in Pancasila education materials in elementary schools, to create digital books that are not only interactive but also contextual.

This study aims to develop a CRT-based digital book prototype for Pancasila education using Flip PDF Professional. By combining the interactive capabilities of digital technology with culturally responsive content, this research seeks to create a learning medium that is not only engaging and effective but also aligned with the diverse cultural heritage of Indonesia. This innovation addresses the limitations of traditional textbooks and offers a pathway to transform Pancasila education into a more impactful and meaningful learning experience for elementary school students.

#### **METHOD**

This research employs a descriptive qualitative research methodology with a focus on designing and testing the feasibility of a digital book prototype for Pancasila Education. This methodology involves observing and describing qualitative data to provide insights into social events, phenomena, or situations, as described by relevant literature. The type of investigation is descriptive as it aims to document and analyze the design and validation process systematically.<sup>(15)</sup>

The project was conducted from June to November 2024 in elementary schools in Garut Regency, West Java, Indonesia. The timeline included the design phase, expert validation, and data analysis. The term prototype in this context refers to an initial version of a digital book created to test the feasibility of integrating cultural elements into Pancasila Education. The Culturally Responsive Teaching (CRT) approach is defined as a pedagogical framework that incorporates students' cultural references to make learning more engaging and effective.

The research began with a needs analysis to identify the specific requirements of elementary school students and teachers for Pancasila Education materials. This phase involved reviewing the current curriculum and observing classroom practices to ensure that the digital book prototype would meet educational goals effectively. In the prototype design phase, the digital book was developed using Flip PDF Professional software. This design included interactive elements such as hyperlinks, animations, and multimedia content to enhance user engagement. The Culturally Responsive Teaching (CRT) approach was applied to integrate Indonesian cultural values, such as Sundanese traditions, into the content, making the material more relevant and meaningful for students. The next stage was validation by experts, involving two groups of professionals. Media design experts assessed the readability, usability, and interactivity of the digital book, while Pancasila Education content experts evaluated the alignment of the material with curriculum standards and the accuracy of the Pancasila principles presented. For data collection and processing, researchers used a validation checklist and an evaluation rubric. Experts provided quantitative scores and qualitative feedback based on specific criteria. The data collected were securely stored in a database and analyzed thematically to identify strengths and areas for improvement in the prototype. Finally, the data presentation phase involved describing the results to provide a comprehensive overview of the prototype's feasibility and its potential effectiveness in enhancing student engagement and understanding of Pancasila values.

#### **RESULTS AND DISCUSSION**

According to Widodo<sup>(13)</sup> a digital book is a publication consisting of text, images, video, sound and published in digital form which can be read on a computer or other electronic device. A digital book is a book which published in digital form, and displayed in flipbook form. Furthermore, a digital book is a book that is compiled, converted and published in digital format, and can be read or displayed using electronic devices.<sup>(16)</sup> On the other hand, Riefni<sup>(17)</sup> added that digital books can make it easier for users to turn pages, access thousands of book titles, prices are relatively cheaper and even free, so there is no need to worry about the availability of digital books.

Digital books offer several advantages, including their ability to mimic the experience of turning pages like physical books, their capacity for incorporating multimedia elements (e.g., animations, videos), interactivity, and attractive layouts that enhance student motivation and literacy skills. Additionally, digital books provide access to a wide range of titles at more affordable prices, or even for free, with broad availability unbound by physical constraints.

One of the leading tools for creating digital books is Flip PDF Professional, which allows educators to develop interactive learning materials. This application enables users to convert PDFs into interactive flipbooks enriched with multimedia elements such as audio, animation, text, video, and flash.<sup>(18)</sup> The output formats include HTML5, EXE, ZIP, Mac apps, mobile versions, and CDs.<sup>(19)</sup> Some notable advantages of this application are its ability to produce interactive publications, provide varied templates, support multiple media types, and offer flexible output options. For instance, the integration of interactive multimedia into Flip PDF Professional improved elementary school students' comprehension and engagement during the learning process. Similarly, research by found that the use of Flip PDF Professional in science education significantly increased students' conceptual understanding and motivation.<sup>(19)</sup>

In the context of CRT (Culturally Responsive Teaching), this approach has been shown to enhance educational relevance and equity by incorporating students' cultural backgrounds into the learning process.<sup>(14)</sup> CRT encourages the integration of local cultural elements into teaching materials, which is particularly critical in diverse countries like Indonesia. For example, research by Kumi-Yeboah & Amponsah<sup>(20)</sup> revealed that the CRT approach, when applied in social studies, increased students' cultural awareness and critical thinking skills. Similarly, Buzzetto-Hollywood<sup>(21)</sup> reported that CRT-based digital books fostered greater student engagement and understanding by presenting content that aligned with students' lived experiences and cultural contexts.

The combination of Flip PDF Professional with the CRT approach represents an innovative solution to current challenges in education. By utilizing the multimedia capabilities of Flip PDF Professional and embedding culturally relevant content, educators can create digital books that are interactive, engaging, and contextually meaningful. Research by Febrianti<sup>(22)</sup> demonstrated that CRT-based digital books developed using Flip PDF Professional significantly improved student outcomes in civic education, particularly in areas related to cultural diversity and national identity. The combination of interactive digital media and CRT increased both student participation and their ability to relate learning materials to real-world experiences.

The integration of CRT into digital learning media aligns with the goals of 21st-century education, which emphasize creating inclusive and equitable learning environments. Flip PDF Professional's capacity to embed multimedia elements, such as videos of local traditions or interactive maps of cultural diversity, further supports this objective. As highlighted by Trisnawati et al.<sup>(23)</sup> interactive CRT-based digital books provide a platform for promoting both digital literacy and cultural appreciation, making them a powerful tool for transforming elementary education in Indonesia.

The digital book prototype was developed using Flip PDF Professional, a robust application for creating interactive e-books in PDF format. This software enables developers to incorporate various multimedia elements, such as audio, video, animation, text, and flash, making the content more engaging for users. Additionally, Flip PDF Professional supports diverse output formats, including HTML5, EXE, zip, Mac app, FBR, and mobile-friendly versions. The application also features a page editor, allowing developers to embed multimedia components seamlessly into the e-book.

Digital books, also referred to as electronic books or e-books, serve as eco-friendly teaching materials by reducing paper usage. They are particularly effective as interactive learning tools due to the integration of multimedia features. For this project, the digital book was designed to enhance the interactivity and engagement of Pancasila Education materials by combining visual and auditory elements to support diverse learning styles.

In the digital book design stage, researchers need to create a flowchart and digital book design via Flip PDF Professional.

The flowchart in figure 1 depicts the flow of interactive learning in the Pancasila Education digital book with the theme "Cultural Diversity within the Frame of Bhinneka Tunggal Ika".

1. The initial stage of this digital book is the "Start" point. Next, the user will be directed to the Title Page, which functions as the opening display for the digital book, and provides general information about the digital book.

2. After the title page, the user will arrive at the Menu, which serves as the main navigation. The menu here has been set as a hyperlink so that users can go to the desired page.

3. In the Choice section, users are given two options. If you select "Yes", the user will be directed to the contents of the digital book to study the material. Meanwhile, if the user selects "No", then the user is directed to exit the application, which is indicated by the "Close" box.

4. The Content section presents two main materials, namely: 1) Indonesian Regional Culture; and 2) The values of Bhinneka Tunggal Ika in Local Culture. The first material covers the topic of cultural diversity in Indonesia, such as traditions, languages, and customs, while the second material focuses on the principle of Bhinneka Tunggal Ika which is reflected in local cultures, as well as highlighting the importance of unity in diversity.

5. After studying both materials, users can select the All option to access both materials at once. This allows users to review all materials holistically.

- 6. After studying the material, users are directed to relevant questions.
- 7. After working on the questions, the user will get the results from the evaluation.

8. Based on the evaluation results, if the user obtains good results, they will be directed to the Enrichment section. This section provides more in-depth advanced material. Meanwhile, if the results are not good, the user will be directed to Remedial. This section contains a repetition of material that aims to help users re-study the material that has been presented.

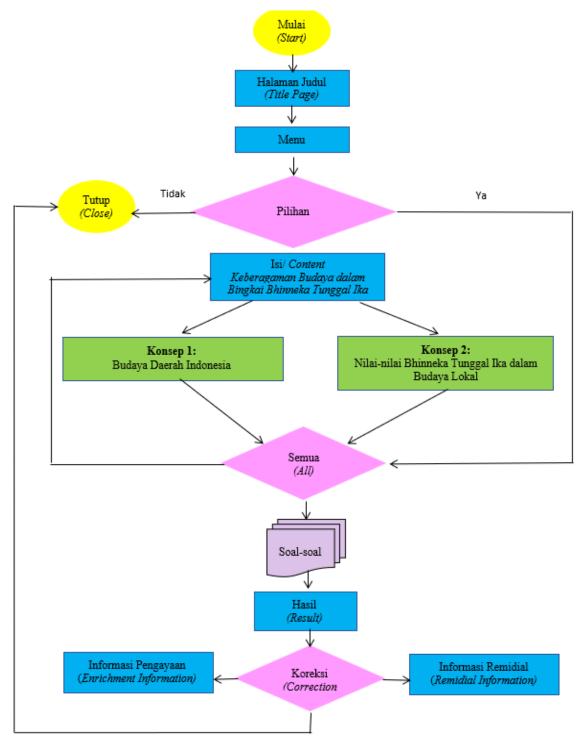


Figure 1. Digital Book's Flowchart Design

The digital book flowchart is designed to provide an adaptive and interactive learning experience. It is hoped that a design like this can increase students' involvement and understanding in learning Pancasila Education, by providing space for them to learn independently according to their respective levels of understanding.

After creating a flowchart, the researcher then created a digital book design using Flip PDF Professional

#### software.

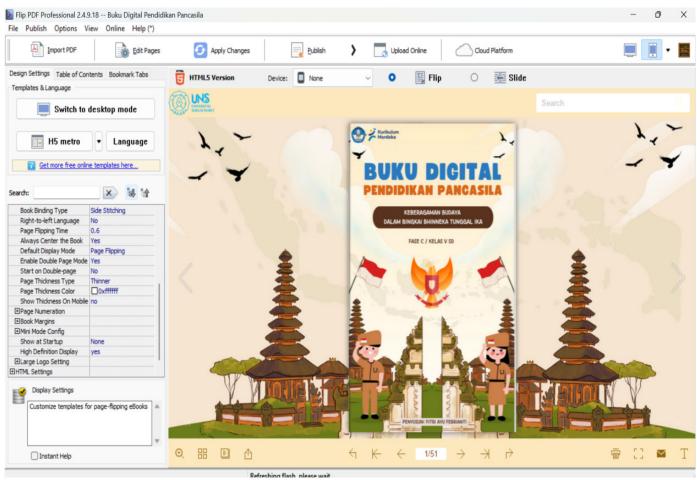


Figure 2. Flip PDF Professional

Based on figure 2, in this research, the digital book design was designed using Flip PDF Professional software. Several aspects that need to be considered in designing this design are as follows.

1. User Interface: Flip PDF Professional provides several customizable settings, such as templates, language, page-flipping animation speed, and display mode. Through this setting, users can learn according to their learning speed.

2. Digital Book Content Design: The digital book cover displays elements of Indonesian culture such as temples, traditional clothing, the Garuda Pancasila symbol, and the red and white flag. These elements interpret national values and strengthen the impression of local Indonesian culture.

3. Interactivity and Animation: Flip PDF Professional offers a page-flipping feature with customizable animations. This can provide a more interactive and interesting learning experience. This book also provides options to display a full-screen menu, zoom in/out, and page search, which makes it easier for users to explore and find the information they need more efficiently.

4. Self-Evaluation and Learning Features: Flip PDF Professional supports adding interactive elements such as practice questions in quiz form. Quizzes are packaged with a gamification system, making them more interesting and fun. Users can also do repeated exercises, according to their needs. Overall, the design of the Pancasila Education digital book based on Flip PDF Professional aims to create teaching materials that are more interesting, interactive, and relevant to the Indonesian cultural context. This design is designed to be easily accessible and understandable for elementary school students, and to encourage their active involvement in learning Pancasila values and cultural diversity.

This research uses a questionnaire instrument to assess the feasibility of the Pancasila Education digital book based on Flip PDF Professional. This questionnaire was assessed by two validators, namely media design experts and content/material experts.

# 1. Validation Results by Media Experts

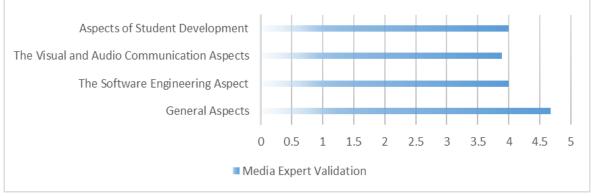


Figure 3. Media Expert Validation

The digital book received a total score of 81 from media experts, with an overall average of 4,05, which falls into the "good" category. This assessment includes four main aspects.

a. General Aspects has an average score of 4,67 in the good category. This shows that the digital book prototype is considered creative, innovative, communicative, and superior in presenting teaching material.

b. The Software Engineering Aspect has an average score of 4,00. This shows that the digital book prototype is considered to fulfill the elements of effectiveness, efficiency, reliability, ease of management (maintainability), as well as suitability and compatibility with user devices. Digital books are rated to meet usability standards, ensuring a comfortable and easy user experience.

c. The Visual and Audio Communication Aspects have an average score of 3,89. This shows that the digital book prototype is considered to support effective understanding of teaching material. Consistent use of color, typography, layout, and navigation creates a harmonious appearance and helps students understand the material better.

d. Aspects of Student Development have an average score of 4. This shows that the digital book prototype is considered appropriate to the cognitive and psychological development of elementary school students. This aspect is important to ensure that this learning media can be used optimally to support student development.



# 2. Validation Results by Content Expert

Figure 4. Content Expert Validation

Validation results from material/content experts show a total score of 68 with an overall average of 4,12, also in the "good" category. This assessment includes three main aspects.

a. Content Feasibility, has an average score of 4,11. This shows that the digital book prototype is in accordance with learning outcomes, main material, and learning objectives. The contents of this digital book are considered to be substantively correct, have examples that are relevant enough for learning needs, and provide additional benefits in increasing students' knowledge of moral and social values.

b. Writing Readability has an average score of 3,75. This shows that the digital book prototype is suitable for students' understanding and the language used does not give rise to multiple interpretations.

In this way, students can be helped to understand the information presented in digital books easily and clearly.

c. Feasibility of Presentation, has an average score of 4,00. This shows that the digital book prototype can be easily understood, and the summary of the included material makes this digital book more comprehensive. This digital book has the potential to improve students' cultural and civic literacy skills, which is in line with the learning objectives of Pancasila Education.

Based on validation from media and materials experts, it can be concluded that this digital book prototype can be developed and is suitable for use as a learning medium for Pancasila education at the elementary school level. Overall, this research shows that CRT-based digital book media can be an alternative solution in learning Pancasila education.

Of course, the development of digital books has a basis such as Piaget's theory, which states that elementary school-age students are at the concrete operational stage, where they learn better through real activities.<sup>(24)</sup> Therefore, interactive and visual learning media, such as digital books based on Flip PDF Professional, are very suitable for the cognitive characteristics of students at this stage. Animations, videos, and flipping features in digital books allow students to visualize the material more realistically and are in line with the principles of constructivism.

Apart from that, the Culturally Responsive Teaching (CRT) approach integrated into the design of this digital book is also based on the theory of cultural relevance in the learning process. Culturally responsive learning makes students feel recognized and appreciated, so that it can increase learning motivation.<sup>(14)</sup> The use of local cultural elements in this digital book aims to make Pancasila education material more contextual. In other words, the CRT approach not only enriches students' understanding of Pancasila, but also strengthens students' emotional attachment to national values.

The findings of this study align with prior research, such as that of Buzzetto-Hollywood,<sup>(21)</sup> which emphasizes the effectiveness of culturally responsive teaching (CRT) in increasing student engagement and understanding. However, our study extends this framework by incorporating interactive multimedia features through Flip PDF Professional. While previous studies have primarily focused on theoretical implementations of CRT, our research demonstrates its practicality and impact when embedded in digital book media for Pancasila Education.

A notable difference between this study and earlier works is the integration of local cultural elements into multimedia content. For instance, animations depicting traditional dances or interactive quizzes based on Indonesian folklore not only enrich the learning experience but also create an emotional connection to the material. This addresses one of the criticisms of traditional digital books, which often lack cultural context and interactivity.

Moreover, while Buzzetto-Hollywood<sup>(21)</sup> and Kumi-Yeboah & Amponsah<sup>(20)</sup> reported improved engagement through CRT-based approaches, our findings suggest that the inclusion of multimedia elements amplifies this effect. The use of Flip PDF Professional allows for a more dynamic and personalized learning experience, catering to diverse learning styles. This is particularly significant for elementary students, as Piaget's theory highlights the importance of concrete and visual representations at the operational stage of cognitive development.<sup>(29)</sup>

Despite these strengths, there are limitations to this study. First, the focus on Pancasila Education within the Indonesian context may limit its generalizability to other subjects or countries. Additionally, while media and content experts validated the digital book, further empirical testing with a broader student population would provide more robust evidence of its effectiveness. Future research could explore the scalability of this approach and its application to other culturally diverse settings or disciplines.

In conclusion, this study contributes to the growing body of literature on digital learning and culturally responsive teaching by demonstrating the practical integration of CRT with interactive multimedia. By addressing the unique cultural context of Indonesia and leveraging technology, this approach not only enhances learning outcomes but also promotes cultural awareness and appreciation. These findings underscore the potential of CRT-based digital books as transformative tools in modern education, particularly in fostering inclusivity and equity in diverse learning environments.

## CONCLUSIONS

This innovation demonstrates significant potential in enhancing the quality of Pancasila Education at the elementary school level. With its interactive design, culturally relevant content, and user-friendly access, this digital book serves as an effective alternative to support learning in the digital era. For media developers, it is recommended to integrate adaptive learning features to personalize content delivery, while educators are encouraged to use this digital book alongside hands-on activities that reinforce Pancasila values. Future research could focus on measuring the impact of this digital book on student learning outcomes and exploring the application of the Culturally Responsive Teaching (CRT) approach in other subjects.

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#### FINANCING

Currently, there are no available financing sources designated for this project. This absence of financial support underscores the need for strategic planning to identify potential funding avenues that could facilitate the successful implementation and advancement of the initiative.

#### CONFLICT OF INTEREST

The authors declare that the research was conducted without any commercial or financial relationships that could be construed as a potential conflict of interest.

## **AUTHORSHIP CONTRIBUTION**

Conceptualization: Fitri Ayu Febrianti. Data curation: Fitri Ayu Febrianti, Rokhmaniyah, Moh. Salimi. Formal analysis: Fitri Ayu Febrianti, Rokhmaniyah, Moh. Salimi. Research: Fitri Ayu Febrianti. Methodology: Fitri Ayu Febrianti, Rokhmaniyah, Moh. Salimi. Project management: Fitri Ayu Febrianti, Rokhmaniyah, Moh. Salimi. Resources: Fitri Ayu Febrianti, Rokhmaniyah, Moh. Salimi. Software: Fitri Ayu Febrianti, Rokhmaniyah, Moh. Salimi. Software: Fitri Ayu Febrianti, Moh. Salimi. Supervision: Rokhmaniyah, Moh. Salimi. Validation: Rokhmaniyah, Moh. Salimi. Display: Fitri Ayu Febrianti, Rokhmaniyah, Moh. Salimi. Drafting - original draft: Fitri Ayu Febrianti, Rokhmaniyah, Moh. Salimi. Writing - proofreading and editing: Moh. Salimi.