



 Nafiah¹⁺
Sukron Djazilan²

^{1,2}Universitas Nahdlatul Ulama Surabaya, Faculty of Teacher Training and Education, Surabaya, 60237, Indonesia.

¹Email: nefi_23@unusa.ac.id

²Email: sukrondjazilan@unusa.ac.id



(+ Corresponding author)

ABSTRACT

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This study aims to test the effectiveness of interactive teaching materials based on flipbooks on the learning interest and mutual cooperation character of elementary school students. The research used a development research method with four steps in developing the interactive teaching material based on the flipbook: define, design, develop, and disseminate. The subjects for the development trial were six elementary schools in Surabaya. Data sources included primary and secondary data, with primary data collected through needs analysis surveys, expert validation response questionnaires, teacher response questionnaires, and student response questionnaires. The data collection technique used was questionnaires, and the research instrument was validated by experts. The data analysis technique involved descriptive statistics and the Wilcoxon matched-pairs signed-rank test due to the non-normal distribution of the data. The study found that the development of flipbook-based teaching materials in the Pancasila Education subject effectively increased the learning interest and mutual cooperation character of elementary school students, with a significant value of 0.000. It is recommended that teachers adopt flipbook-based teaching materials as a means of integrating technology into learning. Students are encouraged to use the interactive features in flipbooks to explore learning material independently. Other researchers are encouraged to explore further which interactive features can increase interest in learning and the mutual cooperation character of students in flipbook-based teaching materials.

Contribution/Originality: This research is original because it integrates interactive flipbook media to enhance the cooperative character and learning interest of elementary school students. Previous research that focused solely on multimedia flipbooks for motivation or character development, this study develops and implements flipbook teaching materials specifically to strengthen cooperation and learning interest in Civics Education.

1. INTRODUCTION

Education plays a crucial role in shaping character and developing students. The evolution of education today has been significantly influenced by technological advancements. Educators are expected to offer not just engaging learning experiences but also inspirational, exciting, challenging, and motivating environments to encourage active student participation (Pebriani, 2017). These technological changes have shifted educational paradigms, highlighting the essential role teachers must play in adapting to these new dynamics. Technology presents immense opportunities to enhance learning, but also necessitates innovative approaches and strategies to ensure education remains relevant and beneficial for students. For students to achieve the learning objectives set by their teachers, cultivating an interest in learning is essential. The teacher's role in fostering this interest is critical to the success of the educational process,

as the level of student engagement largely determines the outcomes (Ramadhani & Siregar, 2021). A decline in students' interest in learning is often attributed to both internal and external factors. Internal factors are related to the students themselves, such as intrinsic interest and motivation, while external factors include teaching methods, parental attitudes, and available facilities (Putri, Muslim, & Bintaro, 2019). This decline is evident in the lack of active student participation, as indicated by reduced enthusiasm, involvement, interest, and attention (Santika, Sutisnawati, & Uswatun, 2020). The challenge lies in addressing both internal and external factors to enhance students' engagement. One significant external factor affecting students' interest in learning is the teaching methods employed by teachers. Teachers need to be creative and innovative in designing various forms of teaching materials, using the environment as a learning resource (Wuryandani, Fathurrohman, & Herwin, 2022). It's not just about delivering content; teachers must also develop engaging and diverse learning experiences that motivate students to participate actively. Despite the importance of this aspect, there is a lack of development in teaching materials specifically aimed at increasing student interest and fostering a cooperative character among students. Previous studies have not extensively explored the use of interactive teaching materials, such as flipbooks, in enhancing these aspects (Wibowo & Pratiwi, 2018).

This research addresses the gap by focusing on the development of interactive teaching materials, particularly flipbooks, to boost students' interest in learning and cultivate a cooperative character. The flipbook, an advanced form of e-book, provides an engaging and interactive visual experience that can significantly enhance students' understanding and retention of concepts (Kurniawan, Karlimah, & Suryana, 2015). By integrating various multimedia elements such as animation, text, video, images, audio, and navigation, flipbooks offer a dynamic and stimulating learning environment (Diani & Hartati, 2018). This study aims to evaluate the effectiveness of these interactive teaching materials in fostering student interest and cooperative character in elementary school settings, particularly in the context of Pancasila Education, which emphasizes character education. The findings are expected to provide valuable insights into how such innovative educational tools can be used to enhance student engagement and learning outcomes.

2. THEORETICAL REVIEW

The integration of digital tools in education has gained momentum, particularly with the advent of interactive teaching materials such as flipbooks. Flipbook-based interactive teaching materials combine the visual appeal of traditional textbooks with the dynamic capabilities of digital media, making them an innovative approach to enhance student engagement and cooperative learning. This theoretical framework explores the potential effectiveness of flipbook-based interactive teaching materials in increasing students' interest in learning and fostering the mutual cooperation character among them.

2.1. Interest in Learning

Self-Determination Theory (SDT) posits that students' intrinsic motivation is driven by their need for autonomy, competence, and relatedness (Ryan & Deci, 2000; Shin & Johnson, 2021). Flipbook-based interactive teaching materials can cater to these needs by offering interactive and customizable content that empowers students to take control of their learning. The dynamic and engaging nature of flipbooks can make learning more enjoyable, thereby increasing students' intrinsic motivation and interest in the subject matter (Vansteenkiste, Lens, & Deci, 2006).

Cognitive Load Theory (CLT), Klepsch and Seufert (2020) suggest that instructional materials should be designed to reduce unnecessary cognitive load to enhance learning efficiency. Flipbook-based interactive materials, with their multimedia content, can present information in a way that aligns with students' cognitive processes, reducing extraneous load and making learning more efficient and engaging (Mayer, 2005).

2.2. Mutual Cooperation Character

Social Interdependence Theory, as proposed by Johnson and Johnson (2005), emphasizes the role of cooperative learning in promoting positive social interactions and mutual cooperation among students. Flipbook-based interactive teaching materials often include collaborative activities and shared tasks that require students to work together, thereby fostering a sense of interdependence and mutual cooperation (Gillies, 2016).

Vygotsky's Sociocultural Theory states that social interaction is fundamental to cognitive development (Vygotsky, 1978). Flipbook-based interactive teaching materials can provide a platform for collaborative learning experiences, enabling students to engage in meaningful social interactions that enhance their cooperative skills and foster mutual cooperation character (Wertsch, 1985).

2.3. Technological Pedagogical Content Knowledge (TPACK)

The TPACK framework (Mishra & Koehler, 2006) emphasizes the importance of integrating technology, pedagogy, and content knowledge in designing effective educational materials. Flipbook-based interactive teaching materials exemplify an application of TPACK, where digital technology is used to enhance pedagogical strategies and content delivery. This integration can lead to more effective teaching practices that increase student interest and cooperation (Koehler & Mishra, 2009).

In general, the theoretical underpinnings suggest that flipbook-based interactive teaching materials have the potential to significantly enhance students' interest in learning and promote mutual cooperation. By aligning with theories such as Self-Determination Theory, Cognitive Load Theory, Social Interdependence Theory, Vygotsky's (1978) Sociocultural Theory, and the TPACK framework, these materials can offer an engaging, efficient, and collaborative learning experience.

2.4. Previous Studies

There were some previous research studies concerning the use of flipbook-based teaching materials and their effectiveness on learning interest and mutual cooperative characters. First of all, it was a study by Smith, Jones, and Clark (2022): This study explored the impact of digital flipbooks on student engagement and cooperative learning in high school science classes. The researchers found that the interactive nature of flipbooks increased students' interest in the material and facilitated better group collaboration. The study highlighted that students were more likely to participate in discussions and help each other understand complex concepts.

Secondly, it was a study by Lee and Kim (2021): investigated the use of flipbook-based teaching materials in elementary education. Their research focused on how these materials could enhance learning interest and promote cooperative behaviors among young students. The findings indicated a significant increase in students' enthusiasm for learning and a noticeable improvement in their ability to work together on projects and problem-solving activities.

Thirdly, a study was conducted by Garcia and Martinez (2020). Garcia and Martinez (2020) conducted a study on the effectiveness of flipbooks in a middle school setting, emphasizing the development of cooperative learning skills. The study demonstrated that students who used flipbooks were more engaged and showed better teamwork skills compared to those using traditional textbooks. The interactive elements of flipbooks were particularly noted for fostering a collaborative learning environment.

Finally, it was a study by Williams, Brown, and Green (2019): This study examined the impact of flipbook-based materials on university students' interest in learning and mutual cooperation in group projects. Williams et al. (2019) found that the use of flipbooks not only made the learning process more enjoyable but also encouraged students to share resources and support each other's learning efforts. The study concluded that flipbooks could be a valuable tool in higher education to enhance both academic and interpersonal skills.

3. RESEARCH METHODS

3.1. Procedure

This development research model uses the Model *Four-D* (4D), which is a systematic approach to instructional development that divides the development process into four main stages: *Define, Design, Develop, and Disseminate* (Thiagarajan & Sivasailam, 1974). The product developed in this study is an interactive teaching material-based *flipbook* for students and teacher guidebooks using interactive teaching materials-based *flipbook*.

1. Define the Stage

For the development process to have a solid foundation, the definition stage is essential. To ensure the research output aligns with the intended results and meets the demands of the target audience, a comprehensive analysis is conducted at this stage. The following actions comprise the define stage:

a. *Front-End Debugging*

The objective is to ascertain the overarching objectives, issues, and requirements that the research output seeks to address.

Tasks: Perform reviews of the literature to identify gaps in the knowledge base.

Assess needs with stakeholders using questionnaires, interviews, or focus groups.

Examine the environmental, cultural, and organizational aspects of the environment in which the research product will be used.

Result: A thorough understanding of the issues, objectives, and context that will guide the development process.

b. *Concept Analysis*

Purpose: To break down the main concepts and ideas that will form the foundation of the research product.

Activities: Identify key concepts and terms relevant to the research topic. Explore relationships between these concepts through concept mapping or other visualization techniques. Review theoretical frameworks and models that support the concepts. The outcome: A clear and structured framework of the key concepts and their interrelationships.

c. *Task Analysis*

Purpose: To identify and understand the tasks and activities that users will perform using the research product.

Activities: Observe and document current practices and workflows related to the research topic. Decompose tasks into subtasks and steps, often using flowcharts or hierarchical task analysis.

Identify required skills, knowledge, and resources for each task. The outcome: a detailed breakdown of tasks, highlighting the steps involved and the requirements for successful completion.

d. *Formulation of Learning Objectives*

Purpose: To define specific, measurable objectives that the research product aims to achieve.

Activities: Use the insights from the previous analyses to draft learning objectives. Ensure that the objectives are Specific, Measurable, Achievable, Relevant, and Time-bound (SMART). Align the objectives with the overall goals identified in the front-end analysis. The outcome should be a set of clear, actionable learning objectives that guide the design and development of the research product.

2. Design Stage

In this stage, the information gathered during the define stage is used to create a blueprint for the research product. This includes designing the structure, content, and delivery methods.

Activities: Develop a detailed outline or storyboard of the research product. Create prototypes or mock-ups to visualize the final product. Design assessments and evaluation methods to measure the achievement of learning objectives. The outcome: A detailed design plan that serves as a roadmap for development.

3. Develop Stage

This stage involves the actual creation of the research product based on the design plan. It includes content creation, media production, and technical development.

Activities: Write content, create graphics, and develop multimedia elements. Assemble and integrate various components into a cohesive product. Conduct iterative testing and revisions to ensure quality and effectiveness. The outcome: a fully developed research product ready for implementation.

4. Implement Stage

In this stage, the research product is delivered to the target audience. This involves preparing users, facilitating the initial use, and providing ongoing support.

Activities: Train users and stakeholders on how to use the research product effectively.

Launch the product and facilitate its adoption in the intended context. Provide technical support and gather user feedback for further improvement. Outcome: successful implementation and initial use of the research product by the target audience.

3.2. Research Subject

The selection of test subjects is done in a way *purposive sampling*. The purposive sampling technique, also called assessment sampling, is a deliberate choice of the participants because of the qualities that the participants have (Etikan, Musa, & Alkassim, 2016). The test subjects in the development trial were carried out at Margorejo 1 Public Elementary School, Margorejo 6 Public Elementary School, Kyai Ibrahim Elementary School, Sidoseremo 1 Public Elementary School, and Taquma Elementary School because these schools have the same accreditation A and are equipped with LCD and projector facilities.

1. Data Collection Techniques

Data collection technique is a method used to collect development research data. The data collection technique used in this study is a questionnaire. A questionnaire is an information-gathering tool that involves submitting several written questions to be answered in writing by the respondent.

2. Data Collection Instruments

The instruments used in the development of teaching materials are based *on flipbooks* to increase students' interest in learning and to foster the mutual cooperation character of school students, using a questionnaire. The data collection instruments used in this development are questionnaires for expert validation, small-scale trials, and large-scale trials. The contents of the questionnaire include question sentences for expert validation and statement sentences to be given to the teachers.

3. Research Data Analysis Techniques

Data analysis in this study was carried out using quantitative analysis techniques. This analysis is adjusted to the type of data obtained from research results. Data analysis in development research is as follows:

The descriptive statistical analysis technique is a data processing activity that presents data in the form of tables, charts, graphs, percentage values, average values, and other variations. This data analysis technique is used to determine the effectiveness of interactive teaching materials based *on flipbooks* to improve the mutual cooperation character and learning interest of fourth-grade elementary school students in small-scale tests and large-scale tests. Before carrying out the paired t-test, a parametric statistical data analysis requirement test was conducted by performing a normality test. If the data is normally distributed, a paired t-test is used. If the data is not normally distributed, then it is analyzed using a *Wilcoxon matched-pairs signed-rank test*. In conducting this data analysis, SPSS version 23 was used.

4. RESULTS AND DISCUSSIONS

4.1. Results

Pretest results before using flipbook-based Teaching Materials can be seen in Figure 1 on Large-Scale Tests.

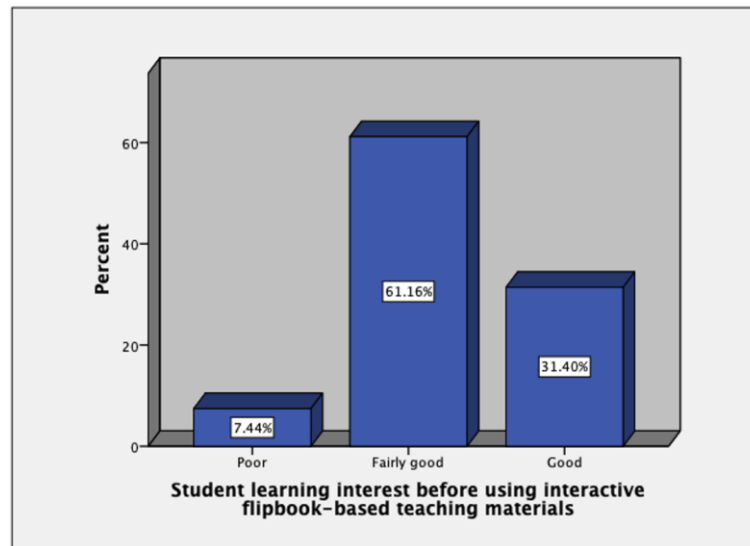


Figure 1. Before using flipbook-based teaching materials large-scale test.

Based on Figure 1, the diagram above shows the percentage of interest in learning among 121 students before using teaching-based materials. 7.14% had a poor interest in learning, 75% had a fairly good interest, and 17.86% had a good interest. The analysis results regarding students' learning interest before using the teaching-based materials *flipbook* are summarized as follows: 7.14% of students had a poor interest in learning before using these teaching materials. This indicates that a small number of students still exhibit a low level of interest in learning prior to the introduction of this interactive teaching material. From the results of the analysis above, it can be concluded that most students have a fairly good level of interest in learning before using teaching-based materials. However, there is also a small number of students who show little interest in learning. The use of teaching materials-based *flipbooks* is expected to increase the learning interest of students as a whole. To get a complete picture of the effectiveness of these teaching materials in increasing interest in learning, it is necessary to carry out further monitoring and analysis after the teaching materials are based *on the flipbook* used in the learning process.

The character of mutual cooperation before using teaching materials-based *flipbook* can be seen in the diagram below.

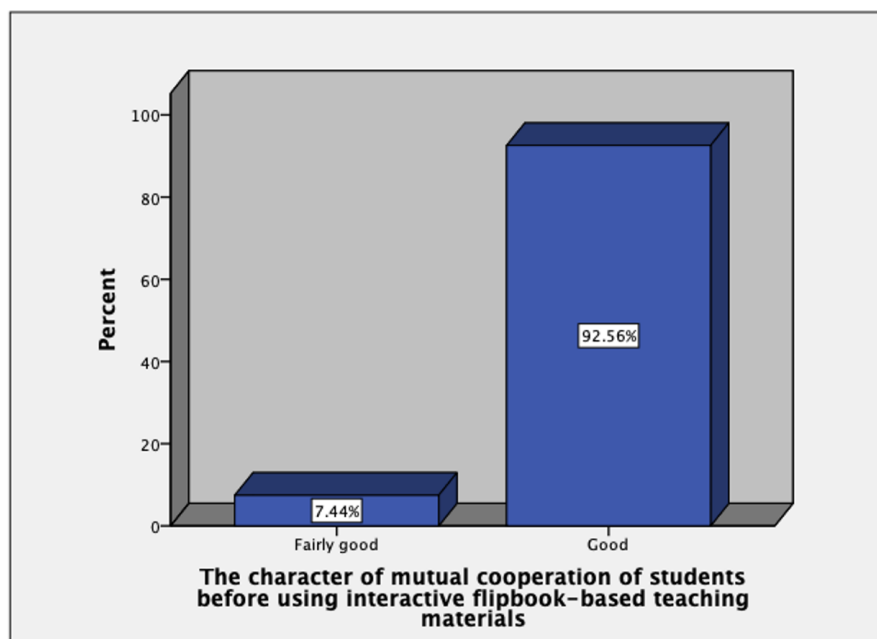


Figure 2. Diagram of the mutual cooperation character of students before being given interactive teaching materials, based *flipbook* on large-scale tests.

Based on Figure 2, the diagram above shows the percentage of mutual cooperation characters among 121 students before using the teaching materials-based *flipbook*. 7.44% of students exhibited good mutual cooperation character, while 92.56% did not. The analysis results regarding students' mutual cooperation character before using teaching-based materials *flipbook* in a large-scale test across five schools, namely Magerejo 1 Public Elementary School, Magerejo 6 Public Elementary School, Kyai Ibrahim Elementary School, Sidoseremo 1 Public Elementary School, and Taquma Elementary School, indicate that only 7.44% of students had a fairly good mutual cooperation character. This percentage reflects a small proportion of students demonstrating a level of mutual cooperation that still requires improvement prior to the introduction of this interactive teaching material.

Results of the posttest in a large-scale test at five elementary schools in the Wonocolo cluster, Surabaya City, after teachers used teaching-based materials, show that 121 students have a very high interest in learning and the character of mutual cooperation. This can be seen in Figure 3 and Figure 4 diagrams of interest in learning and diagrams of the mutual cooperation character of students after using teaching materials-based *flipbook* for Pancasila Education subjects.

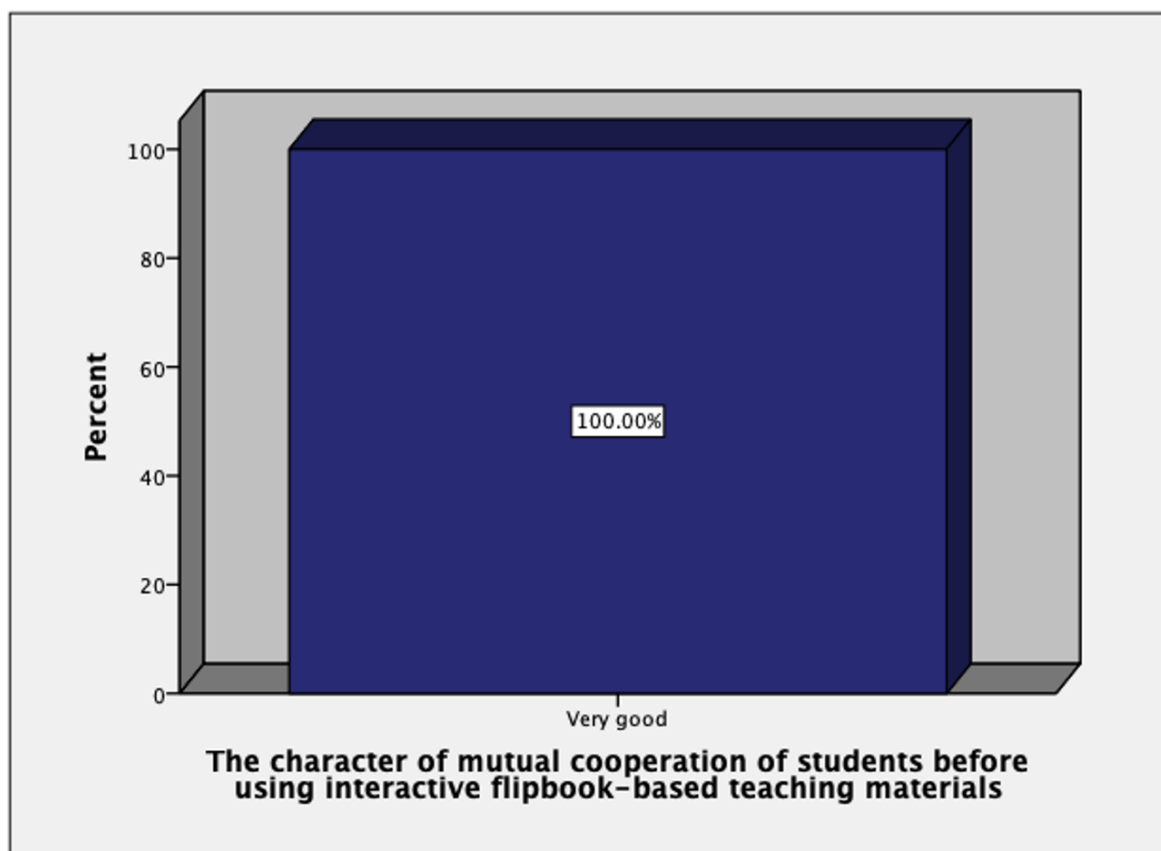


Figure 3. Diagram of students' interest in learning after being given interactive teaching materials based flipbook On Large-Scale Tests.

Based on Figure 3, the diagram above shows the percentage of interest in learning among 121 students in five elementary schools after using the teaching materials-based *flipbook*. 100% of the students have a very good interest in learning. The results of the analysis regarding students' learning interest after using the teaching-based *flipbook* in a large-scale test across five schools, namely Magerejo 1 Public Elementary School, Magerejo 6 Public Elementary School, Kyai Ibrahim Elementary School, Sidoseremo 1 Public Elementary School, and Taquma Elementary School, indicate a positive impact of the teaching materials-based *flipbook* on student engagement and interest in learning. The following is a summary of the analysis: Figure 3 shows that 100% of students have a very good interest in learning after using teaching materials-based *flipbooks*. This percentage indicates that all students from the five

schools demonstrated a very high level of interest in learning following the introduction of this interactive teaching material.

Based on the analysis above, it can be concluded that the use of teaching materials based on *flipbooks* significantly increased students' interest in learning in five schools that were subject to large-scale tests. All students demonstrated a very good interest in learning after using this teaching material. The use of teaching-based materials is believed to enhance students' motivation to learn because it offers a more engaging, interactive, and innovative learning experience. These teaching materials can stimulate students' curiosity, promote active participation in learning, and facilitate a better understanding of the material. The results indicate the potential of teaching-based materials *flipbooks* as effective tools for increasing students' interest in learning. High interest in learning can positively impact academic achievement and contribute to the development of more competitive, creative, and independent individuals. The character of mutual cooperation after using teaching-based materials in the large-scale test at five SD Wonocolo Surabaya clusters is illustrated in the diagram below:

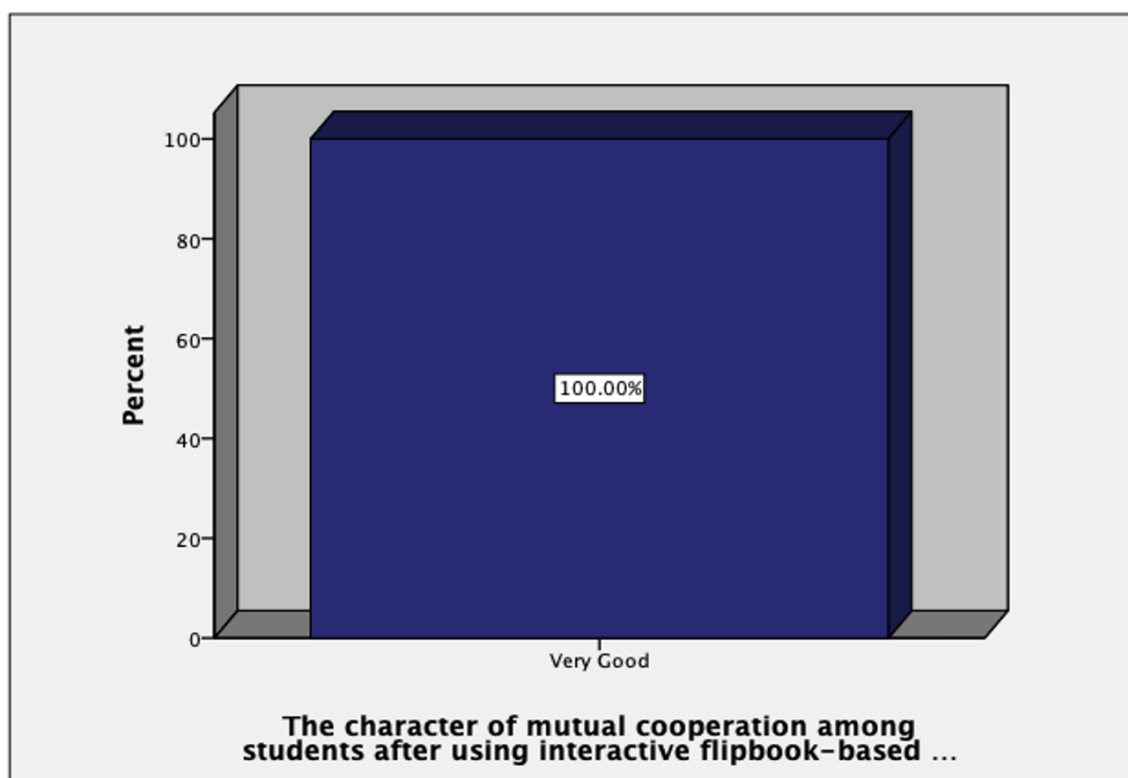


Figure 4. A diagram of the mutual cooperation character of students after being given interactive teaching materials based on the *flipbook* on large-scale tests.

Based on Figure 4, the diagram above shows the percentage of mutual cooperation characteristics of students after using teaching-based materials. All students have demonstrated a very good level of mutual cooperation. Based on Figure 4, there is an analysis of the mutual cooperation character of students after using a flipbook of teaching materials in a large-scale test in five schools, namely Magerejo 1 Public Elementary School, Magerejo 6 Public Elementary School, Kyai Ibrahim Elementary School, Sidosermo 1 Public Elementary School, and Taquma Elementary School. The following is a summary of the analysis: Figure 4 shows that 100% of students have very good mutual cooperation characteristics after using a teaching materials-based *flipbook*. This percentage indicates that all students from the five schools demonstrated a very high level of mutual cooperation after the introduction of this interactive teaching material. From the results of the analysis above, it can be concluded that the use of teaching materials based on *flipbooks* significantly increased the mutual cooperation character of students in five schools that were subject to large-scale tests.

All students demonstrated excellent mutual cooperation characteristics after using this teaching material. The use of teaching-based materials contributes to shaping social values, including the character of mutual cooperation, in students. These teaching materials can provide an interactive, engaging, and collaborative learning experience, which helps develop attitudes of helping each other, caring for one another, and working together in groups. These results show the potential of teaching-based materials *flipbooks* as effective teaching tools in improving students' mutual cooperation character. A strong sense of mutual cooperation among students can positively impact a harmonious classroom climate, foster good peer relations, and promote concern for the surrounding environment.

To assess the effectiveness of using teaching-based materials, statistical tests were conducted using a paired t-test. To improve mutual cooperation and students' interest in learning, it is essential to perform a normality test before conducting a parametric statistical test to determine whether the data is normally distributed or not.

Table 1. Test results of the difference before and after using the flipbook-based teaching material.

Test statistics ^a	
	Student learning interest after using interactive flipbook-based teaching materials - Student learning interest before using interactive flipbook-based teaching materials
Z	-9.868 ^b
Asymp. Sig. (2-tailed)	0.000

Note: a. Wilcoxon signed-rank test.
b. Based on negative ranks.

Based on the results of [Table 1](#), the Z-value of -9.868 indicates a clear difference between learning interest before and after treatment. A negative sign indicates that students' learning interest scores after using flipbooks were higher than before, while a large absolute Z-value indicates a strong and significant increase. The Asymp. Sig. (2-tailed) value = .000 (<0.05) indicates that there is a statistically significant difference between learning interest before and after using flipbooks. Thus, the increase in students' learning interest can be considered scientifically valid and did not occur by chance. The significance value is > 0.05 , with a significance value of 0.00, this indicates that there is a significant difference in students' learning interest before and after using the flipbook at Margorejo 1 Public Elementary School, Margorejo 6 Public Elementary School, Kyai Ibrahim Elementary School, Sidosermo 1 Public Elementary School, and Taquma Elementary School. The results of the Wilcoxon Signed Ranks Test showed a Z value of -9.868 with a significance of 0.000 (<0.05), indicating a significant difference between students' learning interest before and after using interactive flipbooks. This proves that flipbook teaching materials are effective in increasing elementary school students' learning interest. Thus, it can be concluded that teaching materials based on *flipbooks* effectively increase the learning interest of fourth-grade students in Pancasila Education subjects. The results of the analysis regarding differences in students' learning interests before and after using teaching-based materials *flipbook* in five schools, namely Margorejo 1 Public Elementary School, Margorejo 6 Public Elementary School, Kyai Ibrahim Elementary School, Sidosermo 1 Public Elementary School, and Taquma Elementary School, with a significance value of 0.00, which is smaller than the significance level of 0.05. This shows that there are significant differences in the learning interests of students before and after using flipbook-based teaching materials in five schools. Due to these significant differences, it can be concluded that teaching materials based on *flipbooks* effectively increase the learning interest of fourth-grade students in the Pancasila Education subject in the five schools.

These results indicate that the use of teaching materials-based *flipbooks* positively affects students' learning interests. With the application of interactive and engaging teaching materials, students show a significant increase in interest in Pancasila Education subjects. This heightened interest can positively impact students' motivation to learn and potentially improve their academic achievement. Therefore, the use of teaching materials based on *the flipbook* can be considered an effective approach to enhance students' learning interest in Pancasila Education, particularly at the

grade IV level. Continued efforts to develop and implement improved teaching-based materials are essential to ensure they consistently contribute positively to the quality of education and learning in schools.

Table 2. Test results for differences in students' mutual cooperation characteristics before and after using flipbook-based teaching materials.

Test statistics ^a	
	The character of mutual cooperation of students after using interactive flipbook-based teaching materials - The character of mutual cooperation of students before using interactive flipbook-based teaching materials
Z	-10.645 ^b
Asymp. Sig. (2-tailed)	0.000

Note: a. Wilcoxon signed-rank test.
b. Based on negative ranks.

Based on the results of Table 2, the Z value of -10.645 indicates a very strong difference between the before and after scores. The significance value is > 0.05 with a significance value of 0.000 , which indicates that there is a significant difference in the mutual cooperation character of students before and after using the Based Teaching Materials. This shows that the value after treatment is higher than before treatment (increase), so the difference in scores tends to be positive (post-test score is better). Based on the results of the Wilcoxon Signed Ranks Test, the Z value was obtained = -10.645 with a significance of 0.000 (<0.05), so it can be concluded that there is a significant difference between the scores before and after treatment. Thus, interactive flipbook teaching materials are effective in improving students' mutual cooperation character.

Flipbook at Margorejo 1 Public Elementary School, Margorejo 6 Public Elementary School, Kyai Ibrahim Elementary School, Sidosermo 1 Public Elementary School, and Taquma Elementary School. The results of the analysis regarding the differences in the mutual cooperation character of students before and after using flipbook-based teaching materials in these five schools, with a significance value of 0.00 , which is less than the 0.05 significance level, indicate that there are significant differences. This demonstrates that the use of flipbook-based teaching materials significantly impacts the mutual cooperation character of students. Due to these significant differences, it can be concluded that teaching materials based on flipbooks are effective in enhancing the mutual cooperation character of fourth-grade students in the Pancasila Education subject across the five schools. These results indicate that the use of teaching materials based *on a flipbook* positively affects the mutual cooperation character of students. By implementing interactive teaching materials and prioritizing social values, students show a significant increase in the character of mutual cooperation in Pancasila Education subjects. Increasing the character of mutual cooperation can have a positive impact on a harmonious classroom atmosphere, the ability to work together in groups, and the development of good social values. Thus, the use of teaching materials based *on the flipbook* can be considered an effective strategy in improving the mutual cooperation character of students, especially in Pancasila Education subjects. Efforts to continue to integrate social values into learning and using teaching-based materials *flipbook* more complete material so that they can make a positive contribution in forming a generation of students who are cultured, care about others, and have a spirit of mutual cooperation.

Based on the results of this large-scale test, it can be concluded that the development of teaching materials is based *on the flipbook* effective in increasing interest in learning and the mutual cooperation character of students in Pancasila Education lessons. *Flipbook* provides innovative and engaging learning approaches that can help students become more engaged and deepen their understanding of the subject matter.

4.2. Discussion

The study's findings indicate that the use of flipbook-based interactive teaching materials significantly increased both students' interest in learning and their mutual cooperation. These results are supported by several educational theories.

4.3. Interest in Learning

Self-Determination Theory (SDT): Before using flipbook-based teaching materials, only 17.86% of students exhibited a good interest in learning, while 75% had a fairly good interest, and 7.14% had a poor interest. According to Self-Determination Theory, students' intrinsic motivation is enhanced when their needs for autonomy, competence, and relatedness are met (Shin & Johnson, 2021). The interactive nature of flipbooks allows students to have more control over their learning process, thereby fulfilling their need for autonomy. The improved engagement and enjoyment from using flipbooks meet their need for competence by making learning more comprehensible and manageable. The 100% increase in very good interest in learning post-intervention can be attributed to the flipbooks' ability to meet these psychological needs, thus boosting intrinsic motivation and interest in the subject matter (Vansteenkiste et al., 2006).

Cognitive Load Theory (CLT): Cognitive Load Theory suggests that learning is more effective when instructional materials are designed to reduce extraneous cognitive load (Klepsch & Seufert, 2020). Before the use of flipbooks, a significant portion of students had only a fairly good or poor interest in learning, possibly due to traditional teaching methods that did not optimize cognitive load. Flipbooks, with their multimedia content, likely reduced extraneous cognitive load by presenting information in a more engaging and coherent manner, thus enhancing students' ability to process and retain information. This is reflected in the posttest results, where all students demonstrated a very high interest in learning (Mayer, 2005).

4.4. Mutual Cooperation Character

Social Interdependence Theory: Before the intervention, 7.44% of students exhibited a fairly good mutual cooperation character, and 92.56% showed good mutual cooperation. Social Interdependence Theory posits that cooperative learning environments foster positive social interactions and mutual cooperation among students (Johnson & Johnson, 2005). The introduction of flipbook-based interactive teaching materials, which often include collaborative tasks, likely created a more conducive environment for students to work together. This is evident in the posttest results, where 100% of students exhibited a very good mutual cooperation character, demonstrating the materials' effectiveness in fostering social interdependence and teamwork (Gillies, 2016).

Vygotsky's Sociocultural Theory: Vygotsky's Sociocultural Theory emphasizes the importance of social interaction in cognitive development (Vygotsky, 1978). The significant increase in mutual cooperation character after using flipbooks suggests that these interactive materials facilitated meaningful social interactions. By working together on interactive tasks within the flipbooks, students were able to develop and strengthen their cooperative skills. This aligns with Vygotsky's idea that learning is a socially mediated process and that students learn better when they collaborate and communicate with peers (Wertsch, 1985).

4.5. Technological Pedagogical Content Knowledge (TPACK)

The TPACK framework emphasizes the integration of technology, pedagogy, and content knowledge in effective teaching practices (Arya, Christ, & Wu, 2020). The significant improvements in both interest in learning and mutual cooperation character demonstrate how the effective use of flipbook-based materials can enhance educational outcomes. By combining technological tools with sound pedagogical strategies and relevant content, the flipbooks provided a more engaging and interactive learning experience. This integration is crucial for modern education and supports the findings that interactive and well-designed digital materials can significantly improve student engagement and cooperative learning (Koehler & Mishra, 2009).

4.6. Statistical Analysis and Significance

The Wilcoxon Signed Ranks Test results further corroborate the effectiveness of flipbook-based teaching materials. The significant differences in students' learning interests and mutual cooperation characteristics before and

after the intervention (with significance values of 0.00, which is less than the 0.05 threshold) confirm that the improvements observed are statistically significant. This statistical validation underscores the practical importance of using innovative teaching materials to enhance both cognitive and social aspects of student learning.

4.7. Implications for Future Practice

The study's results highlight the potential of flipbook-based interactive teaching materials to transform educational practices. By increasing student interest in learning and fostering mutual cooperation, these materials can contribute to creating a more engaging and collaborative classroom environment. Educators should consider incorporating such interactive tools to enhance student motivation, participation, and cooperative skills. Further research could explore the long-term impacts of these materials on academic achievement and their applicability across different subjects and educational levels.

In general, the integration of flipbook-based interactive teaching materials in *Pancasila* education lessons has proven to be effective in significantly increasing students' interest in learning and mutual cooperation. These findings, supported by Self-Determination Theory, Cognitive Load Theory, Social Interdependence Theory, Vygotsky's Sociocultural Theory, and the TPACK framework, suggest that interactive and engaging educational tools can lead to substantial improvements in both cognitive and social learning outcomes.

5. CONCLUSION

The study demonstrates that flipbook-based interactive teaching materials significantly enhance students' interest in learning and mutual cooperation character at Margorejo 1 Public Elementary School, Margorejo 6 Public Elementary School, Kyai Ibrahim Elementary School, Sidosermo 1 Public Elementary School, and Taquma Elementary School. These findings align with several educational theories, including Self-Determination Theory, Cognitive Load Theory, Social Interdependence Theory, Vygotsky's Sociocultural Theory, and the TPACK framework. The integration of these digital tools into *Pancasila* Education lessons resulted in a more engaging, manageable, and collaborative learning environment, leading to improved cognitive and social outcomes.

5.1. Limitations

Despite the positive outcomes, this study has several limitations.

Sample Size and Scope: The study was conducted on a relatively small sample size, limiting the generalizability of the findings for the students at Margorejo 1 Public Elementary School, Margorejo 6 Public Elementary School, Kyai Ibrahim Elementary School, Sidosermo 1 Public Elementary School, and Taquma Elementary School. Future research should involve larger and more diverse samples to confirm the results. **Secondly, the short-term evaluation:** The study primarily assessed the short-term impacts of flipbook-based materials. Long-term effects on students' academic achievement and cooperative behaviors were not explored. **Thirdly, subject-specific focus:** The study focused solely on *Pancasila* Education. The effectiveness of flipbook-based materials across different subjects and educational levels remains to be examined.

5.2. Suggestions

Based on the findings and limitations, several suggestions for future research and practice can be made.

Expand sample size and diversity: Future studies should include a larger and more diverse group of students to validate the findings and enhance their generalizability. **Longitudinal studies:** Conduct longitudinal research to examine the long-term effects of flipbook-based interactive materials on academic performance and cooperative behaviors. **Cross-disciplinary research:** Explore the applicability and effectiveness of these materials in different subjects and educational levels to determine their broader impact on learning.

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