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Development of Fun Thinkers Book as an Interactive Learning Media for Science Learning

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Abstract Science education is crucial in developing students' critical thinking and analytical skills. However, conventional teaching methods often fail to engage students effectively, leading to difficulties in understanding scientific concepts. This study aims to develop and evaluate the Fun Thinkers Book as an interactive instructional medium for fourth-grade science students at MI Salafiyah Sidorenggo, Malang Regency. Utilizing the ADDIE model, the research followed five phases: Analysis, Design, Development, Implementation, and Evaluation. The validity of the Fun Thinkers Book was assessed through expert validation, obtaining scores of 90% from subject matter experts, 86% from media experts, and 88% from classroom teachers, categorizing it as highly valid. The practicality test, conducted through field trials, revealed that 84.8% of students found the book engaging and easy to use, confirming its high practicality. The results indicate that the Fun Thinkers Book is a valid and practical instructional tool that enhances students' engagement and comprehension in science education. Future research should explore its adaptability across different grade levels and subjects to further improve its educational impact.

Keywords: ADDIE, Fun thinkers book, Interactive learning media, Science, Development

INTRODUCTION

Education plays a fundamental role in human development, enabling individuals to realize their full potential (Shavkidinova et al., [2023](#); Pramana et al., [2021](#); Agbedahin, [2019](#)). According to Indonesia's National Education System Law No.

20 of 2003, education aims to cultivate students' abilities, build strong faith, enhance intelligence, and develop moral character, dignity, and skills. Quality education fosters knowledgeable individuals who contribute positively to society and national development (Lin et al., [2020](#); Boeren, [2019](#)). The learning process must be effective to achieve these objectives, ensuring that students acquire essential competencies through structured instruction and engaging educational methods.

Science education is essential in equipping students with critical and analytical thinking skills (Alberts, [2022](#); Larimore, [2020](#)). Under the independent curriculum, science learning integrates natural and social sciences to foster curiosity, interest, and active participation in students. This approach aligns with real-life experiences, making science education more engaging and applicable. The curriculum emphasizes project-based learning, where teachers create instructional materials tailored to students' needs and learning objectives. Through interdisciplinary projects, students gain direct experiences, enhancing their cognitive and problem-solving abilities.

Despite the importance of science education, challenges remain in effectively engaging students. The traditional teaching approach, often characterized by teacher-centered instruction and rote memorization, limits students' motivation and conceptual understanding. Observations at MI Salafiyah Sidorenggo indicate that many teachers still rely on lecture-based methods with minimal media integration. The predominant use of textbooks and verbal explanations often results in student disengagement. Interviews with educators reveal that approximately 30% of fourth-grade students struggle to understand science concepts through conventional teaching methods. This highlights the need for innovative instructional strategies and media to enhance student engagement and comprehension.

Instructional media serves as an essential tool in facilitating learning, making abstract concepts more tangible and interactive (Nasution & Sofyan, [2024](#); Nasution et al., [2024](#); Capuno et al., 2020; Soliu et al., [2019](#); Harahap et al., [2019](#)). Effective media fosters an engaging learning environment, enabling students to grasp complex ideas with ease. One such media that aligns with elementary students' learning characteristics is the Fun Thinkers Book. Designed with a learning through play approach, this interactive book combines visual elements and hands-on activities, making science learning more appealing. Research suggests that Fun Thinkers Books improve students' cognitive skills, motivation, and overall learning outcomes by presenting educational content in a structured yet engaging format (Rifai, [2024](#); Nizaar & Haifaturrahmah, [2023](#); Dzakina & Ali, [2022](#); Wijaya et al., [2021](#)).

The Fun Thinkers Book incorporates structured activities with colorful illustrations, guiding students through learning exercises that encourage critical thinking (Dzakina & Ali, [2022](#)). By integrating this media into science lessons, educators can create a dynamic classroom environment that fosters active participation and deepens conceptual understanding. The book's format aligns

with elementary students' natural inclination toward interactive and visual learning, ensuring that scientific concepts are delivered in an accessible and enjoyable manner.

Teachers play a crucial role in maximizing the effectiveness of instructional media (Said, [2023](#); Utomo, [2023](#)). In addition to using innovative resources like the Fun Thinkers Book, educators must adopt interactive teaching methods that align with students' learning styles. However, preliminary observations at MI Salafiyah Sidorenggo reveal that many teachers lack access to diverse educational media, limiting their ability to implement engaging learning experiences. This study addresses the gap by developing and evaluating the Fun Thinkers Book as an instructional tool for fourth-grade science education, aiming to enhance students' understanding and interest in scientific concepts.

The implementation of the Fun Thinkers Book at MI Salafiyah Sidorenggo is expected to improve students' learning experiences by making lessons more interactive and engaging. The book's structured format supports independent learning while allowing teachers to facilitate discussions and activities effectively. Given the growing emphasis on student-centered learning, integrating the Fun Thinkers Book aligns with contemporary educational practices, promoting knowledge retention and skill development among elementary students. Therefore, this study aims to assess the validity, practicality, and effectiveness of the Fun Thinkers Book in science learning for fourth-grade students.

METHOD

This research employs a Research and Development (R&D) design utilizing the ADDIE model (Branch & Varank, [2009](#)) to develop an innovative instructional medium for the science course in elementary school. The ADDIE model, consisting of five phases: Analysis, Design, Development, Implementation, and Evaluation, ensures a structured and systematic approach to the development process.

The first phase, Analysis, involves identifying the needs, challenges, and learning gaps in the science for fourth-grade students. Data collection in this phase includes a needs analysis conducted through interviews with teachers, observations in the classroom, and questionnaires distributed to students and educators. This phase ensures that the Fun Thinkers Book aligns with the students' learning needs and accommodates the pedagogical approaches adopted at MI Salafiyah Sidorenggo.

The second phase, Design, focuses on drafting the instructional content, structure, and layout of the Fun Thinkers Book. The process includes determining learning objectives, designing interactive and engaging exercises, and integrating both visual and textual elements to enhance students' comprehension. At this stage, prototypes and storyboards are created to visualize the final product. Expert validation from instructional designers and subject matter experts is sought to refine the book's structure and content.

The third phase, Development, entails producing the actual Fun Thinkers Book based on the finalized design. This step includes selecting suitable materials, refining the content to align with the fourth-grade curriculum, and creating interactive activities that foster student engagement. The prototype is then subjected to expert validation. Feedback is gathered through focus group discussions and individual expert assessments to refine the product before field testing.

The fourth phase, Implementation, involves piloting the Fun Thinkers Book in the fourth-grade science classroom at MI Salafiyah Sidorenggo. The implementation process includes training teachers on how to integrate the material into their lesson plans and observing its application in a real classroom setting. Data collection in this phase is conducted through direct observation and feedback. This phase provides insights into the usability levels associated with the developed media. The final phase, Evaluation, assesses the overall effectiveness of the Fun Thinkers Book based on feedback and learning outcomes.

The data collection techniques employed in this study are both qualitative and quantitative to ensure a comprehensive analysis of the Fun Thinkers Book's impact. Qualitative data is gathered through teacher and student interviews, classroom observations, and document analysis, whereas quantitative data is derived from Likert-scale surveys and statistical analysis of student performance. The triangulation method is used to enhance data validity by cross-verifying findings from multiple sources.

The study employs descriptive statistical analysis for quantitative data. The qualitative data is analyzed using thematic analysis, categorizing responses from interviews and observations into meaningful themes that reflect students' and teachers' experiences. The study's reliability and validity are ensured through expert validation, pilot testing, and multiple rounds of refinement based on feedback.

This research follows ethical considerations, ensuring that all participants provide informed consent before data collection. Anonymity and confidentiality are maintained throughout the study, and participants have the right to withdraw at any stage without consequences.

FINDINGS AND DISCUSSION

The development of the Fun Thinkers Book as an instructional medium for science learning in fourth grade at MI Salafiyah Sidorenggo, Malang Regency, was conducted using the ADDIE model (Branch & Varank, [2009](#)), with several images of the product development process along with product drafts shown in Figure 1.

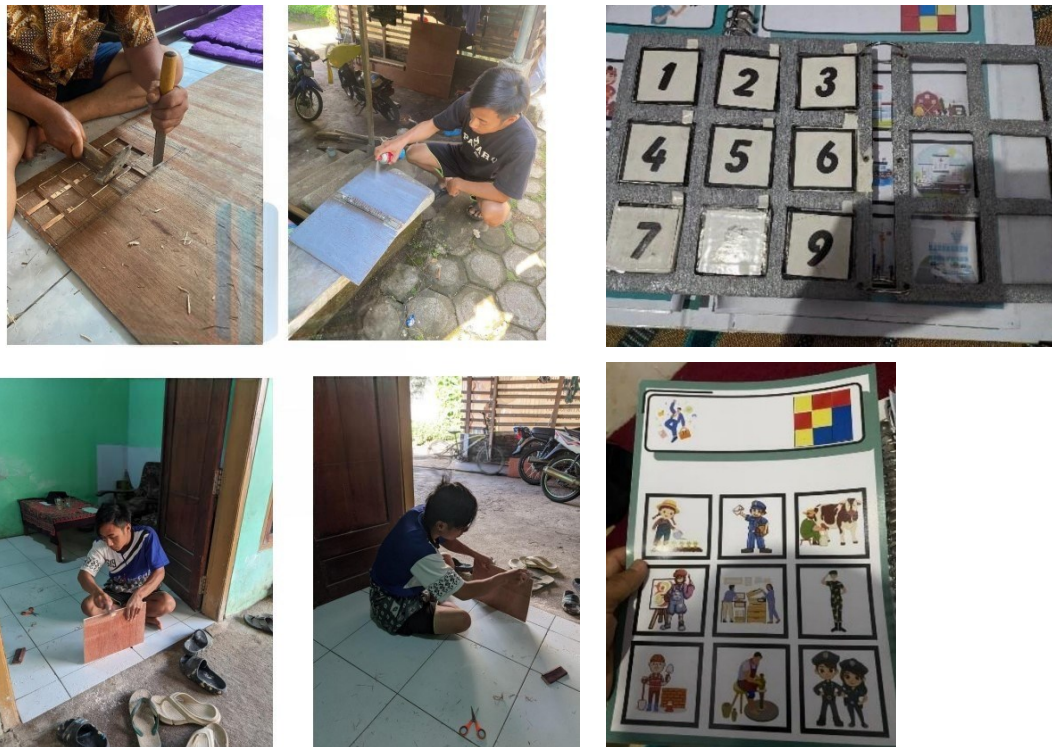


Figure 1. Product development process (left) and initial drafts (right) of the Fun Thinkers Book.

The validity of the Fun Thinkers Book was assessed through expert validation involving a subject matter expert, a media expert, and an instructional expert. The subject matter expert reviewed the content to ensure alignment with the science curriculum and learning objectives. The results indicated a validation percentage of 93%, categorizing the content as highly valid. This score was based on content feasibility, material accuracy, technical presentation, and language aspects. The media expert evaluated the design, interactivity, and usability of the book, yielding a validation percentage of 90%, also categorized as highly valid. This assessment considered the quality of visual elements, technical aspects, and ease of use. Additionally, a classroom teacher assessed the practicality and applicability of the book, assigning a validation percentage of 88%, confirming its high validity based on instructional quality and technical aspects. These findings suggest that the Fun Thinkers Book meets the necessary criteria for educational media development and can effectively support science learning.

The practicality of the Fun Thinkers Book was examined through field trials conducted with fourth-grade students at MI Salafiyah Sidorenggo. Teachers were trained to integrate the book into their lesson plans, and observations were conducted to assess the ease of use, student engagement, and teacher satisfaction. The results demonstrated that the book was user-friendly, with teachers reporting minimal difficulties in implementation. Students showed enthusiasm while interacting with the book, actively participating in learning activities, and demonstrating increased motivation. A teacher survey indicated that 90% of respondents found the book practical for daily instruction, citing its structured

content, interactive exercises, and visual appeal as key strengths. Additionally, students responded positively in a questionnaire, with an average response percentage of 84.8%, categorizing the book as highly practical. Students found the book engaging due to its clear material presentation and visually appealing images, which facilitated their understanding of various job types. They also reported that the book was easy to use in classroom settings. These findings confirm the practicality of the Fun Thinkers Book in real classroom settings. Students engaging with the game presented in Figure 2.



Figure 2. Students engaging with the Fun Thinkers Book game during the science lesson.

Further qualitative analysis was conducted to explore students' learning experiences and perceptions. Classroom observations revealed that students actively engaged with the book, collaborating with peers, answering questions, and demonstrating curiosity about scientific phenomena. Interviews with students indicated that they found the book's activities enjoyable and beneficial in understanding science topics. Teachers also noted a shift in students' attitudes toward science learning, with increased participation and interest in discussions. These qualitative findings reinforce the quantitative data, highlighting the book's effectiveness in fostering an interactive and engaging learning environment, as found by Rifai (2024), Nizaar & Haifaturrahmah, (2023), Dzakina & Ali, (2022) & Wijaya et al. (2021).

The evaluation phase included a summative assessment to identify areas for improvement. Feedback from teachers suggested minor refinements in content presentation, such as incorporating more real-life examples and additional hands-on activities. Students recommended adding more colorful illustrations and interactive elements to further enhance engagement. Based on this feedback, revisions were made to optimize the book's instructional value while maintaining its core pedagogical principles. The final version of the Fun Thinkers Book integrates these improvements, ensuring a high-quality learning resource for science education.

CONCLUSION

The development of the Fun Thinkers Book as an instructional medium for science education in fourth grade at MI Salafiyah Sidorenggo has proven to be highly valid and practical. Expert validation confirmed the book's strong educational foundation, with high scores in content accuracy, design quality, and pedagogical alignment. Field trials demonstrated its practicality, with teachers and students finding it easy to use and engaging. These findings indicate that the Fun Thinkers Book is a valuable tool for improving science education by fostering interactive learning and enhancing students' conceptual understanding. Future studies should explore its implementation in broader educational contexts to maximize its potential impact on student learning.

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