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ENHANCING INTEREST AND ACHIEVEMENT: DEVELOPMENT OF SMARTBOX LEARNING MEDIA IN *PANCASILA* EDUCATION

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Abstract
This study aimed to develop Smartbox learning media to enhance student interest and learning achievement in Pancasila Education for third-grade elementary students. The research employed a Research and Development (R&D) approach using the ADDIE model, consisting of Analysis, Design, Development, Implementation, and Evaluation stages. The study was conducted at SD Negeri Salamsari, involving 30 third-grade students as participants. Data were collected through expert validation forms, student questionnaires on learning interest, pre-test and post-test assessments, classroom observations, and teacher interviews. The media received high validity scores from experts: 93.3% from media experts and 97.5% from material experts. After implementation, student motivation and participation increased significantly, and the average academic scores improved from 58 in the pre-test to 82 in the post-test. These results suggest that the Smartbox is an effective learning tool for transforming abstract Pancasila concepts into engaging, concrete learning experiences that support both student motivation and academic achievement.

Keywords: elementary, *Smart Box*, Pancasila education

Introduction

Pancasila Education is a core component of Indonesia's national education system, aiming to shape students' character and instill moral and civic values. At the elementary level, it plays a crucial role in developing ethical foundations, discipline, and social responsibility from an early age. However, its instructional delivery often encounters challenges, particularly due to the abstract and philosophical nature of Pancasila values, which can be difficult for young learners to comprehend given their developmental stage that still relies heavily on concrete thinking (Artika et al., 2024). Educational researchers worldwide recognize the pivotal role of interactive learning tools in transforming traditional pedagogical approaches and enhancing student engagement across diverse academic disciplines. The shift toward student-centered learning methodologies emphasizes the importance of developing educational resources that not only convey information but also actively involve learners in the knowledge construction process. This paradigmatic transformation in education necessitates continuous innovation in instructional media design and implementation strategies (Sitompul et al., 2024).

Elementary education, particularly in the Indonesian context, faces unique challenges in delivering abstract concepts effectively to young learners who require concrete and tangible learning experiences. Pancasila Education, as a fundamental component of Indonesia's national curriculum,

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encompasses complex philosophical and moral principles that traditionally prove challenging for third-grade students to comprehend through conventional teaching methods (Aryfien et al., 2025). The abstract nature of these concepts often creates barriers between students and meaningful learning, resulting in decreased motivation and suboptimal academic performance. Contemporary educational theory emphasizes the critical importance of age-appropriate instructional strategies that align with elementary students' cognitive development stages and learning characteristics.

The successful implementation of Pancasila Education principles requires innovative pedagogical approaches that transform abstract concepts into accessible, engaging learning experiences (Sitompul et al., 2024). In practice, the teaching methods commonly used in elementary schools remain conventional, relying heavily on lectures, memorization, and textbook-centered activities. As a result, students find it difficult to relate the material to real-life situations. In subjects like Pancasila Education, third-grade students frequently show low interest and struggle to understand essential civic concepts such as democracy, tolerance, and social justice in a meaningful way. Research in educational psychology consistently demonstrates the profound impact of student interest and motivation on academic achievement, particularly in elementary education settings. When students exhibit genuine interest in learning activities, their cognitive engagement, retention rates, and overall academic performance significantly improve across various subject areas. Conversely, lack of interest often leads to passive learning behaviors, reduced participation, and diminished educational outcomes that can have lasting effects on students' academic trajectories. The relationship between student motivation and learning effectiveness has been extensively documented in educational literature, highlighting the critical need for instructional approaches that prioritize student engagement and active participation. Understanding and addressing motivational factors becomes essential for educators seeking to optimize learning experiences and promote successful educational outcomes (Sitompul et al., 2024).

Previous studies have demonstrated that visual and interactive learning media can significantly improve student motivation and learning outcomes. Learning that incorporates hands-on and exploratory activities has been shown to increase concept mastery and student engagement, especially in subjects that are typically perceived as abstract or unappealing. However, most of these studies have focused on science, mathematics, and language subjects, with limited attention given to their application in Pancasila Education. This gap in the literature highlights that, despite the proven effectiveness of game-based and visual learning approaches, their implementation in the context of civic education remains underexplored. To date, there has been a lack of innovative learning media specifically designed to help elementary students engage with and internalize national values in a fun and contextualized manner. Thus, there is a pressing need to develop instructional tools that are not only engaging in design but also pedagogically effective in delivering abstract content.

Classroom observations and teacher interviews were conducted at SD Negeri Salamsari revealed that most third-grade students have difficulty understanding Pancasila Education content and exhibit low participation during lessons. Teachers also expressed the need for more creative, interactive, and developmentally appropriate media. These findings underscore the necessity of introducing innovative interventions to improve both instructional quality and student engagement in understanding Pancasila values.

In response to these challenges, this study seeks to develop an instructional media called *Smartbox*, which integrates visual elements, educational games, and tactile learning strategies. The media aims to provide students with concrete, engaging, and meaningful learning experiences. The development process adopts a Research and Development (R&D) approach using the ADDIE model,

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which includes five stages: Analysis, Design, Development, Implementation, and Evaluation. The final product is expected to enhance both student motivation and conceptual understanding in Pancasila Education.

In line with the aim of this study, several key research questions were formulated to guide the development and evaluation process of the instructional media. This research seeks to develop a valid and feasible Smartbox instructional media for use in third-grade Pancasila Education and to assess its effectiveness in improving students' learning interest and academic performance. Accordingly, the guiding research questions are: (1) To what extent is the Smartbox instructional media valid and feasible for use in third-grade Pancasila Education? and (2) How effective is the Smartbox in enhancing students' learning interest and academic achievement in Pancasila Education? These questions serve as the foundation for evaluating the pedagogical contributions of Smartbox in addressing challenges related to the delivery of abstract civic concepts in primary education. The study contributes not only to the practical enhancement of civic education at the elementary level but also to the scholarly discourse on interactive instructional media in values education. Ultimately, it is expected to offer a more contextual, participatory, and developmentally appropriate learning strategy for young learners.

Literature Review

This literature review aims to outline the key concepts that serve as the theoretical foundation for the development of the Smartbox instructional media, particularly within the context of Pancasila Education at the elementary level. Understanding concepts such as learning interest, academic achievement, interactive instructional media, and instructional design approaches is essential for providing a rational and methodological justification for this study. By referring to established theories and previous research findings, this section provides a conceptual framework that supports the need to develop innovative media aimed at improving the quality of civic education in primary schools.

Interactive learning media in elementary education

The evolution of educational technology has fundamentally transformed approaches to elementary instruction, with interactive learning media emerging as a pivotal component in modern pedagogical practices. Contemporary research consistently demonstrates that interactive educational tools significantly enhance student engagement, comprehension, and retention rates compared to traditional instructional methods across diverse academic disciplines. The integration of technology-enhanced learning experiences addresses the changing needs of digital-native students who demonstrate increased responsiveness to multimedia and interactive educational content (Aulia et al., 2024). Educational theorists argue that interactive media creates multiple pathways for knowledge acquisition, accommodating various learning styles and cognitive preferences among elementary learners. The widespread adoption of interactive learning tools reflects a broader shift toward student-centered educational approaches that prioritize active participation and experiential learning opportunities.

Research in cognitive psychology reveals that interactive learning media activates multiple sensory channels simultaneously, creating richer neural connections and improving long-term memory formation in young learners (Firda et al., 2022). The multi-sensory engagement facilitated by interactive tools aligns with established principles of cognitive load theory, which emphasizes the

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importance of distributing information processing across different cognitive systems to optimize learning effectiveness. Educational neuroscience studies indicate that interactive learning experiences stimulate brain regions associated with attention, motivation, and memory consolidation, resulting in enhanced academic performance and increased intrinsic motivation (Ismawati et al., 2023). The neurological basis for interactive learning effectiveness provides scientific validation for the observed improvements in student outcomes when traditional instruction is supplemented with engaging, hands-on educational activities. These findings support continued investment in interactive learning media development as evidence-based strategies for enhancing educational quality and effectiveness (Aryfien et al., 2025).

Elementary education research emphasizes the critical importance of concrete, manipulable learning experiences for young children who are transitioning from concrete operational to formal operational thinking stages according to Piaget's developmental theory. Interactive learning media provides tangible representations of abstract concepts, enabling students to explore, experiment, and discover relationships through direct manipulation and observation of educational materials (Chusna et al., 2024). The hands-on nature of interactive tools addresses developmental needs of elementary learners who require physical engagement with learning materials to construct meaningful understanding of complex concepts. Educational psychologists note that interactive media bridges the gap between abstract theoretical knowledge and concrete practical application, facilitating deeper comprehension and skill transfer across various learning contexts. The alignment between interactive learning approaches and elementary students' developmental characteristics explains the consistently positive outcomes observed in research studies examining the effectiveness of technology-enhanced instruction (Chusna et al., 2024).

Contemporary educational practice increasingly recognizes the limitations of traditional lecture-based instruction in meeting the diverse needs of modern elementary students who demonstrate varying learning preferences, attention spans, and technological expectations. Interactive learning media addresses these challenges by providing flexible, adaptable educational experiences that can be customized to accommodate individual learning differences and preferences (Ranuharja et al., 2021). The personalization capabilities of interactive tools enable educators to differentiate instruction effectively, ensuring that all students have opportunities to engage with content in ways that maximize their learning potential. Research demonstrates that classrooms incorporating interactive learning media show improved academic outcomes, higher levels of student satisfaction, and enhanced teacher effectiveness compared to environments relying solely on conventional instructional methods. The growing body of evidence supporting interactive learning media effectiveness has led to increased adoption rates and continued investment in educational technology development across elementary education contexts.

Game-based learning and student motivation

Game-based learning has emerged as a transformative pedagogical approach that harnesses the motivational power of play to enhance educational experiences and outcomes in elementary education settings. Educational research consistently demonstrates that incorporating game elements into learning activities significantly increases student engagement, intrinsic motivation, and willingness to persist through challenging academic tasks. The psychological principles underlying game-based learning draw from self-determination theory, which identifies autonomy, competence, and relatedness as fundamental drivers of human motivation and engagement (Jääskä et al., 2022). Games

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naturally provide opportunities for students to exercise choice, experience mastery, and connect with peers, creating optimal conditions for sustained learning motivation. The integration of game mechanics into educational contexts transforms potentially mundane academic activities into engaging, purposeful experiences that students approach with enthusiasm and curiosity.

The motivational impact of game-based learning stems from its ability to provide immediate feedback, clear goals, and progressive challenges that maintain optimal levels of cognitive engagement without overwhelming learners. Research in educational psychology reveals that games create flow states characterized by deep concentration, loss of self-consciousness, and intrinsic motivation that enhance learning effectiveness and retention (Agustina et al., 2024). The element of challenge progression in games aligns with Vygotsky's zone of proximal development theory, ensuring that learning activities remain appropriately challenging while remaining achievable with effort and support. Game-based learning environments naturally scaffold student learning by providing hints, practice opportunities, and multiple attempts at mastery, reducing anxiety and increasing confidence in academic abilities. The supportive, low-stakes nature of game-based learning encourages risk-taking and experimentation, fostering creative problem-solving skills and resilience in the face of academic challenges (Ramli et al., 2020).

Educational applications of game-based learning principles demonstrate particular effectiveness in subjects that traditionally present engagement challenges, such as abstract concepts in social studies, mathematics, and character education curricula. Games provide contexts for meaningful practice and application of knowledge, transforming rote memorization tasks into strategic thinking opportunities that require deeper understanding and skill development (Rajendran et al., 2024). The social interaction components of many educational games promote collaborative learning, peer support, and communication skills that extend beyond academic content to encompass important social-emotional learning objectives. Research indicates that students participating in game-based learning activities demonstrate improved problem-solving abilities, critical thinking skills, and creative approaches to academic challenges across various subject areas. The transferable skills developed through game-based learning experiences contribute to overall academic success and prepare students for increasingly complex learning demands in higher grade levels.

Implementation of game-based learning strategies requires careful consideration of educational objectives, student developmental characteristics, and alignment with curriculum standards to ensure that engaging activities support rather than distract from learning goals. Effective game-based learning integrates assessment opportunities that provide meaningful feedback to both students and teachers regarding progress toward educational objectives and areas requiring additional support or instruction. The design of educational games must balance entertainment value with pedagogical effectiveness, ensuring that game elements enhance rather than overshadow learning content and objectives (Al-Khayat et al., 2023). Professional development for educators implementing game-based learning approaches focuses on understanding game mechanics, managing classroom dynamics during game activities, and leveraging game-generated data to inform instructional decisions. The successful integration of game-based learning requires ongoing evaluation and refinement to maintain educational effectiveness while preserving the motivational benefits that make this approach particularly valuable for elementary learners.

Media development using ADDIE model

The ADDIE model represents a systematic, iterative approach to instructional design and media development that ensures educational products meet established quality standards while addressing

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authentic learning needs and objectives. This comprehensive framework provides structure for complex development projects by breaking the process into five distinct yet interconnected phases: Analysis, Design, Development, Implementation, and Evaluation, each contributing essential elements to successful product creation (Hidayat & Nizar, 2021). Educational media developers worldwide recognize ADDIE as a gold standard for systematic product development that minimizes risks, maximizes effectiveness, and ensures alignment between educational goals and final products. The model's flexibility allows for adaptation across various educational contexts, content areas, and target populations while maintaining rigorous development standards and quality assurance procedures. Research consistently demonstrates that educational products developed using ADDIE methodology show superior effectiveness, user satisfaction, and longevity compared to products created through less systematic approaches (Prihartini et al., 2025).

The Analysis phase of ADDIE methodology involves comprehensive examination of learner characteristics, learning environments, content requirements, and existing challenges that the proposed educational media aims to address through innovative solutions. This foundational phase establishes the research base for all subsequent development activities, ensuring that design and development decisions are grounded in empirical evidence and stakeholder needs rather than assumptions or preferences (Firda et al., 2022). Effective analysis procedures include needs assessments, learner characteristic studies, environmental analysis, task analysis, and goal specification that collectively inform the development of appropriate, effective educational solutions. The thoroughness of the analysis phase directly impacts the success of subsequent development phases, as inadequate initial investigation often results in products that fail to address authentic needs or align with implementation contexts. Contemporary ADDIE applications emphasize participatory analysis approaches that involve stakeholders throughout the investigation process, ensuring that diverse perspectives and requirements are incorporated into product specifications.

The Design and Development phases translate analytical findings into concrete product specifications and functional educational media through systematic planning, creation, and refinement processes that ensure quality and effectiveness. Design activities focus on creating detailed blueprints, storyboards, and prototypes that guide subsequent development work while ensuring alignment with established learning objectives and user requirements. Development procedures involve actual product creation, expert review, and iterative refinement based on feedback from subject matter specialists, media experts, and representative users who evaluate various aspects of product quality and functionality (Ranuharja et al., 2021). The integration of user-centered design principles throughout these phases ensures that final products are intuitive, accessible, and engaging for target audiences while maintaining educational effectiveness and curriculum alignment. Quality assurance procedures embedded within design and development phases include multiple validation checkpoints, expert review cycles, and usability testing that identify and address potential issues before implementation.

The Implementation and Evaluation phases provide opportunities for real-world testing and comprehensive assessment of educational media effectiveness in authentic learning environments with actual target users. Implementation procedures include careful planning for product introduction, user training, technical support, and data collection that enable systematic evaluation of product performance and user experience. Evaluation activities encompass both formative assessment during development and summative evaluation following implementation, providing comprehensive evidence regarding product effectiveness and areas for continued improvement. The cyclical nature of ADDIE methodology encourages continuous refinement based on evaluation findings, ensuring

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that educational media evolve to meet changing needs and maintain effectiveness over time. Research demonstrates that educational products developed using complete ADDIE methodology show sustained effectiveness, positive user acceptance, and successful achievement of intended learning outcomes across diverse implementation contexts. In conclusion, the development of game-based interactive instructional media such as Smartbox is well-supported by theoretical foundations concerning learning interest, learning outcomes, media effectiveness, and instructional design. The combination of practical classroom needs and insights from educational theory reinforces the relevance and urgency of this study in providing meaningful, enjoyable, and effective learning experiences for elementary students in Pancasila Education.

Research Method

Research design and approach of the study

This research employs a Research and Development (R&D) methodology specifically designed to create innovative educational products that address identified learning challenges and enhance instructional effectiveness in elementary education contexts. The R&D approach provides a systematic framework for identifying educational problems, designing potential solutions, and developing practical products that can be implemented effectively in real classroom settings. This methodological framework emphasizes the iterative nature of product development, incorporating continuous feedback and refinement throughout the research process to ensure optimal educational outcomes. The R&D methodology enables researchers to bridge the gap between theoretical educational principles and practical classroom applications, resulting in evidence-based solutions that address authentic educational needs (Yam, 2022). The systematic nature of this approach ensures rigorous evaluation of developed products through multiple validation stages and comprehensive stakeholder feedback mechanisms.

The development process adopted the ADDIE model comprising Analysis, Design, Development, Implementation, and Evaluation due to its systematic, iterative, and practical structure, particularly suited for educational media development at the elementary level. Compared to models such as Dick & Carey or Borg & Gall, which are more appropriate for large-scale instructional systems and programs, the ADDIE model offers a more flexible and manageable approach for small-scale product development (Wahab, 2021). Additionally, the 4D model, though often used in media development, emphasizes dissemination stages that were beyond the scope of this initial product trial (Agustina et al., 2024). Each phase of the ADDIE model was closely aligned with the objectives of the study. In the Analysis phase, learning needs were identified through classroom observations, interviews with teachers, and a curriculum review to explore the challenges students faced in engaging with Pancasila Education. The Design phase translated these findings into the initial prototype of the Smartbox, including visual, interactive, and content components. During the Development phase, the prototype was built using Canva and supplemented with physical materials, followed by a validation process involving content and media experts. The Implementation phase involved a limited trial with Grade III students to evaluate the usability and effectiveness of the media in a real classroom setting. Finally, the Evaluation phase measured the impact of the Smartbox on students' learning interest and academic outcomes through structured instruments.

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Research site and participants

The study involved 30 third-grade students from SD Negeri Salamsari, consisting of 16 boys and 14 girls aged between 8 and 9 years old. These participants were considered to be in Piaget's concrete operational stage of cognitive development, indicating a need for hands-on and visual learning experiences (Sugiyono, 2013). The school was selected through purposive sampling based on the relevance of its student profile to the research objectives specifically, students' difficulties in understanding abstract content within conventional Pancasila Education instruction. SD Negeri Salamsari is located in a semi-urban area of Kendal Regency, Central Java, and is characterized by limited access to digital learning tools and a predominantly lecture-based teaching approach. Although the school possesses basic multimedia equipment such as projectors and speakers, students have minimal prior exposure to interactive or technology-enhanced media. This makes it an appropriate site for the implementation of a semi-digital, tangible, and visually engaging instructional tool like the Smartbox.

Data collection and analysis

Data collection in this study was carried out systematically across the five stages of the ADDIE development model: Analysis, Design, Development, Implementation, and Evaluation. In the analysis stage, classroom observations and structured interviews with third-grade teachers at SD Negeri Salamsari were conducted to identify students' difficulties in understanding abstract Pancasila concepts and to determine the instructional needs. Observations focused on student engagement, attention span, and interaction during Pancasila lessons, while interviews explored teachers' perspectives on existing teaching methods and their limitations.

During the design and development stages, a prototype of the Smartbox was created based on the needs identified earlier. Experts in instructional design and civic education were consulted through validation sheets to assess the content accuracy, instructional alignment, interactivity, language clarity, and visual design. The media validation process involved filling out a structured rubric, followed by qualitative feedback from the experts. This input informed revisions to the initial prototype.

In the implementation stage, the revised Smartbox was tested in a real classroom setting involving 30 third-grade students over three consecutive weekly sessions. Before implementation, a briefing session was held to introduce the students to the use of the Smartbox and its game-based elements to ensure familiarity and minimize confusion. The data collection process involved multiple instruments designed to comprehensively measure the effectiveness of the Smartbox media. These included classroom observations and teacher interviews, which aimed to identify specific learning challenges, particularly students' difficulties in understanding abstract Pancasila concepts. A student learning interest questionnaire was administered both before and after implementation to track motivational changes; this instrument covered affective, behavioral, and cognitive components, adapted and validated through expert review to ensure content relevance and clarity.

Pre-tests and post-tests were employed to assess academic improvement in students' understanding and application of Pancasila values. The test items were constructed based on indicators from the national curriculum and underwent validation by subject matter experts to ensure construct validity and alignment with instructional goals. Expert validation forms were also used to evaluate the Smartbox media in terms of content accuracy, visual design, interactivity, and pedagogical suitability. These instruments were reviewed using structured checklists developed with reference to Borg and Gall's development model and criteria from (Sugiyono, 2018) to establish both content and face

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validity. Reliability testing using Cronbach's Alpha was conducted on the questionnaire and test instruments, resulting in coefficients of 0.87 and 0.81 respectively, indicating high internal consistency. Each tool was selected and designed to serve a distinct function in triangulating the results and supporting both the formative and summative evaluation phases of the study. The learning interest questionnaire was designed using a four-point Likert scale and focused on affective, cognitive, and behavioral indicators. The academic tests consisted of 10 multiple-choice items, measuring students' ability to identify and apply values of Pancasila in real-life contexts. Both instruments were reviewed by experts to ensure content validity.

The Smartbox media underwent a rigorous validation process involving two subject matter experts one in educational media design and the other in Pancasila Education. They evaluated the product using structured checklists covering content appropriateness, visual clarity, interactivity, linguistic suitability, and curriculum alignment. The media validation yielded a result of 93.3%, while the content validation scored 97.5%, both falling into the "very valid" category. Furthermore, the reliability of the instruments used for measuring learning interest and academic outcomes was confirmed through Cronbach's Alpha analysis, resulting in coefficients of 0.87 and 0.81, respectively, indicating high internal consistency.

The data collection and analysis process followed a structured and sequential approach, beginning with the initial needs analysis and progressing through the stages of product design, development, expert validation, implementation, and evaluation. The implementation phase was conducted across three consecutive classroom sessions over a three-week period. For the analysis of student learning outcomes, a paired sample t-test was employed to compare pre-test and post-test scores, aiming to identify statistically significant differences in academic performance. This test was selected due to its suitability in measuring changes in the same group before and after an intervention, as recommended by Creswell (2012) in experimental educational research. Additionally, the normalized gain score (N-Gain) was calculated to assess the magnitude of learning improvement and classify the effectiveness level, following the criteria developed by Hake (1998), where an N-Gain between 0.3 and 0.7 is considered moderate, and above 0.7 is high.

The researcher, a trained primary education practitioner with methodological competence in both qualitative and quantitative educational research, carried out the entire process of data handling and analysis. Triangulation was applied by integrating quantitative test data with qualitative insights gathered from observations and interviews to enhance the validity of the findings. The researcher ensured the integrity and objectivity of the process by following established data analysis procedures in educational R&D studies (Gall, Gall, & Borg, 2003), including consistent coding of qualitative data, cross-verification of emerging patterns, and validation of statistical assumptions prior to conducting the t-test. This rigorous analytic approach supported the reliability of the conclusions drawn regarding the effectiveness of the Smartbox instructional media.

Results

The Smartbox learning media underwent rigorous validation by subject matter and media experts. The media expert assessment yielded a score of 93.3%, indicating a high degree of validity in terms of visual design, interactivity, usability, and age-appropriate layout. Meanwhile, the material expert validation resulted in a score of 97.5%, confirming the content's strong alignment with the national curriculum and its pedagogical relevance for third-grade students. Both validation results

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underscore the media's quality and suitability for instructional use, with only minor revisions suggested, which were subsequently integrated into the final product.

Table 1. *Media validation result by experts*

Rated aspect	Media Expert (%)	Material Expert (%)
Content Suitability	94	98
Curriculum Suitability	92	97
Visuals and Design	95	-
Interactivity	92	-
Language and Limitations	94	96
Total Average	93,3	97,5

Following implementation, student interest in Pancasila Education demonstrated substantial improvement. Pre-intervention surveys revealed limited motivation and interest among learners, with most responses falling within the negative or neutral categories. However, post-intervention data indicated a significant positive shift, with the majority of students expressing enjoyment, enthusiasm, and increased participation. Classroom observations supported this transformation. Students showed enhanced attentiveness, voluntary involvement in learning activities, and greater responsiveness during discussions. Expert reviewers praised the media's ability to transform abstract philosophical concepts into concrete, manipulable learning experiences that align with elementary students' cognitive development stages and learning preferences. The content validation process confirmed that all educational materials within the Smartbox accurately represent Pancasila principles while presenting them in formats that facilitate understanding and retention among target learners. Material experts particularly commended the integration of real-life application examples and interactive questioning strategies that encourage critical thinking and practical application of learned concepts. The exceptionally high validation scores from both media and material experts provide strong evidence of the Smartbox's readiness for classroom implementation and potential effectiveness in addressing identified educational challenges.

The second research question addressed the extent to which the Smartbox media could enhance students' interest in learning Pancasila Education. To answer this, a pre- and post-intervention questionnaire was administered, supported by classroom observations of student engagement throughout the learning process.

The results revealed a significant increase in students' learning interest. Before using the media, the average score from the interest questionnaire was **60.1%**, categorized as "moderate interest." After the implementation of Smartbox, the score rose to **86.7%**, which falls into the category of "high interest." Students showed noticeable improvements in asking questions, participating in discussions, and responding enthusiastically to classroom activities. These findings were further corroborated by teacher observations, which noted greater attentiveness and active participation during lessons.

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Table 2 *Comparison of student learning interest before and after smartbox*

Learning Interest Indicator	Before (%)	After (%)
Enjoyment in Pancasila lessons	58.0	88.0
Active in group discussions	60.0	85.0
Voluntarily expressing opinions	59.0	87.0
Maintaining focus during learning	63.5	86.5
Overall Average	**60.1**	**86.7**

Furthermore, students' academic performance also exhibited marked improvement. The average pre-test score was 58, which rose to 82 in the post-test. This increase suggests that the Smartbox media not only enhanced student motivation but also contributed to a deeper understanding of Pancasila values. Statistical analysis using a paired sample t-test confirmed that the difference between pre-test and post-test scores was statistically significant ($p < 0.05$), with a normalized gain score in the moderate-to-high effectiveness range. These outcomes collectively indicate that the Smartbox media effectively supports both cognitive and affective learning outcomes in the context of Pancasila Education.

Table 3. *Student learning outcomes before and after smartbox use*

Test Type	Average Score	Effectiveness Category
Pre-test	58	Low
Post-test	82	High
N-Gain	0.57	Moderate–High

These findings clearly align with the study's objectives and research questions. The Smartbox instructional media was found to be valid, engaging, and effective in improving both students' learning interest and cognitive achievement in Pancasila Education. The integration of game-based and tactile components helped make abstract civic concepts more concrete and meaningful, particularly for young learners at the elementary level.

Discussion

The findings from this study provide robust evidence supporting the effectiveness of the Smartbox learning media in addressing challenges commonly associated with the delivery of abstract civic content to elementary learners. The high validation scores obtained from media and content experts demonstrate that the media fulfills key instructional design principles while maintaining coherence with the cognitive needs of young learners. The incorporation of visual, game-based, and tactile elements enabled the transformation of abstract Pancasila principles into meaningful, concrete learning experiences. These results are consistent with constructivist theories, which emphasize learner-centered environments and experiential learning as mechanisms for deepening conceptual understanding.

The findings of this study are largely consistent with previous research on game-based learning and interactive media. Studies by Jääskä et al. (2022) and Agustina et al., (2024) similarly found that

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instructional games increase motivation and learning engagement. What distinguishes the current study is its specific application in the context of Pancasila Education, a field where such approaches remain underexplored. While previous studies focused primarily on science and literacy, this research demonstrates that similar pedagogical benefits can be extended to values-based learning. Moreover, the successful adaptation of the ADDIE model to develop Smartbox reinforces the model's utility not only in content-heavy disciplines but also in abstract, philosophical domains such as civic education.

The significant increase in student interest following the implementation of the media aligns with previous research highlighting the motivational impact of game-based learning approaches. By presenting content through interactive activities, the Smartbox fostered intrinsic motivation, engagement, and positive emotional responses that are essential for sustained learning. Such engagement is crucial in Pancasila Education, where internalization of values is as important as factual understanding. The improvement in student participation and classroom dynamics observed during the study further supports the conclusion that the Smartbox media contributed to a more active and collaborative learning environment.

The observed improvement in academic achievement affirms that the use of interactive media not only supports affective outcomes but also enhances cognitive learning. The ability of students to demonstrate improved comprehension and application of Pancasila values in practical contexts suggests that the media successfully facilitated knowledge transfer. These outcomes validate the effectiveness of integrating educational games and visual media into civic instruction, as such approaches are more likely to align with students' developmental stages and learning preferences.

Despite the overall success, a few students experienced initial difficulties in adjusting to the new format, particularly in understanding game mechanics. This observation reinforces findings from previous studies indicating that learners' digital readiness and prior exposure to non-traditional learning environments can influence the adoption of innovative instructional media. Therefore, to maximize the effectiveness of such media, it is recommended that teachers provide guided orientation sessions prior to implementation.

In sum, the Smartbox learning media presents a pedagogically sound, practically feasible, and empirically validated tool for improving both motivation and achievement in Pancasila Education. Its effectiveness lies in its ability to contextualize abstract national values within engaging and interactive learning experiences. These findings contribute to the growing literature on instructional media design, particularly in civic education, and provide practical insights for educators seeking to enhance learning outcomes in elementary settings through technology-enhanced, student-centered pedagogies.

The dramatic transformation in student attitudes and engagement levels following Smartbox implementation represents a significant achievement in addressing the identified challenges in Pancasila Education delivery. The shift from predominantly negative responses to overwhelmingly positive feedback demonstrates the media's effectiveness in rekindling student interest and motivation in a subject previously characterized by low engagement levels. This transformation suggests that the interactive, game-based approach successfully addressed the fundamental disconnect between traditional instructional methods and contemporary student learning preferences. The improved student responses indicate that the Smartbox media effectively transformed abstract Pancasila concepts into accessible, engaging learning experiences that resonate with elementary students' developmental needs and interests (Humairoh & Sri Sami Asih, 2024). The sustained positive engagement observed during implementation suggests that the media's impact extends beyond novelty effects, indicating genuine improvement in educational quality and effectiveness. These findings

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contribute to the growing body of evidence supporting the integration of interactive learning media in elementary education, particularly for subjects requiring abstract concept comprehension.

The significant improvements in academic performance observed through comparative pre-test and post-test analysis provide empirical evidence of the Smartbox media's educational effectiveness beyond measures of engagement and interest. The enhanced student comprehension of instructions and improved accuracy in identifying Pancasila principles demonstrate that increased engagement translates into meaningful learning outcomes and skill development (Maulidiyah, 2024). The notable improvements in practical application abilities suggest that the interactive nature of the Smartbox successfully addresses one of the primary challenges in Pancasila Education: connecting abstract principles with concrete daily life experiences. These academic gains indicate that the media's game-based approach does not sacrifice educational rigor for engagement, but rather enhances learning effectiveness through improved motivation and participation. The comprehensive nature of observed improvements, spanning both theoretical understanding and practical application skills, demonstrates the media's potential to address multiple learning objectives simultaneously. These results support educational theories emphasizing the connection between student motivation and academic achievement, while providing practical evidence of effective instructional media design principles (Uliya, 2024).

The research findings align with contemporary educational theory emphasizing the importance of interactive, student-centered learning approaches in elementary education, particularly for subjects requiring abstract concept comprehension. The success of the game-based learning approach implemented in the Smartbox validates theoretical frameworks advocating for the integration of play and learning in educational contexts. The positive outcomes observed in this study contribute to the growing evidence base supporting innovative instructional media development as a means of addressing persistent challenges in traditional educational delivery methods. The research demonstrates that carefully designed interactive learning tools can successfully bridge the gap between educational objectives and student learning preferences, resulting in improved outcomes across multiple performance indicators (Zahra et al., 2024). These findings have implications for educational practice, curriculum development, and teacher training programs seeking to enhance the quality and effectiveness of elementary education delivery. The study's contribution to educational literature extends beyond immediate classroom applications, informing broader discussions about the role of technology and creativity in modern pedagogy.

The successful development and implementation of the Smartbox learning media provides a model for future educational media development projects, demonstrating the effectiveness of systematic R&D approaches in creating practical solutions to identified educational challenges. The comprehensive validation process employed in this study establishes standards for ensuring quality and effectiveness in educational media development, while the positive outcomes validate the investment of time and resources in innovative instructional tool creation (Aulia et al., 2024). The research methodology's success in producing a validated, effective educational product demonstrates the value of evidence-based development approaches that incorporate stakeholder input throughout the design and refinement process. The study's findings encourage continued investment in educational innovation and provide practical guidance for educators and developers seeking to create similar learning solutions. The positive reception from students, teachers, and experts suggests potential for broader adoption and adaptation of the Smartbox concept in various educational contexts and subject areas. These outcomes support continued research and development in

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educational media innovation as a means of enhancing teaching effectiveness and student learning experiences.

In summary, while the Smartbox has proven to be a promising instructional innovation, its refinement and expanded application offer meaningful opportunities for future research and educational practice. Its success in improving student interest and learning outcomes in Pancasila Education provides valuable insights for the continued development of engaging, values-oriented instructional media in elementary education settings.

Despite the demonstrated strengths of the Smartbox learning media in enhancing students' engagement and academic performance, several limitations should be acknowledged. One key limitation of the media lies in the initial adjustment period required for students who are unfamiliar with game-based or interactive learning formats. Some students encountered difficulties in understanding the game mechanics and instructions, necessitating additional teacher support, particularly during the initial stages of implementation. Furthermore, the Smartbox is designed as a semi-digital, physical learning tool and has not yet fully integrated adaptive digital technologies. This limits its accessibility and scalability in classrooms that rely heavily on digital or remote learning platforms. Future improvements could explore digital enhancements or integration with augmented reality to broaden its applicability and accessibility.

From a methodological standpoint, the study also presents several limitations. First, the participant selection was limited to a single elementary school in a semi-urban area using purposive sampling, which restricts the generalizability of the findings to broader and more diverse student populations. Second, the scope of the study focused exclusively on third-grade students in the context of Pancasila Education, leaving the potential effectiveness of the media in other subjects or grade levels unexplored. Third, the implementation period was limited to three sessions over three weeks, which was insufficient to examine long-term impacts on value internalization and character development. Lastly, the study was conducted as a limited-scale trial, and did not involve wide-scale deployment or varied instructional environments, which may have yielded different results. These limitations should be considered when interpreting the findings and highlight the need for future research to expand the scope, duration, and contexts of media application.

Conclusion and Recommendation

This study set out to develop and evaluate the Smartbox instructional media as a means of improving learning interest and academic achievement in Pancasila Education among third-grade elementary students. Aligned with the research objectives and questions, the study found that the Smartbox media was highly valid in terms of both content and design, as confirmed by expert evaluations. The implementation of Smartbox resulted in a substantial increase in students' learning interest, as well as significant improvement in their academic performance, as measured through pre- and post-tests. The Smartbox proved to be an effective medium for delivering abstract civic concepts in a more concrete and engaging format. Its integration of visual, tactile, and game-based components made it particularly suitable for young learners who benefit from interactive and hands-on learning experiences. The media not only enhanced student motivation and classroom participation but also fostered a deeper understanding of Pancasila values in daily life.

In conclusion, the Smartbox instructional media offers a promising alternative for civic education at the elementary level. Its development and implementation provide valuable insights into how interactive, game-based learning tools can address the common challenges of teaching abstract

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values to young students. The success of this media supports the broader application of learner-centered and developmentally appropriate instructional design in values education. Based on the successful outcomes of this research, several recommendations emerge for educators, administrators, and future researchers seeking to enhance elementary education through innovative learning media development. Educational institutions should consider implementing similar interactive learning tools across various subject areas, particularly those involving abstract concepts that traditionally challenge elementary students, while providing adequate teacher training and support for effective media integration. Future research endeavors should explore the long-term impact of interactive learning media on student achievement, investigate the scalability of the Smartbox approach across different educational contexts, and examine the potential for adapting this methodology to other grade levels and subject areas. Educational policymakers should recognize the value of supporting innovative learning media development through funding initiatives, professional development programs, and curriculum integration guidelines that facilitate widespread adoption of evidence-based educational technologies. Additionally, collaboration between educational researchers, technology developers, and classroom practitioners should be strengthened to ensure continued innovation in learning media design that addresses evolving educational needs and leverages emerging technological capabilities for enhanced teaching and learning effectiveness. For future research, it is recommended that similar studies be conducted in more diverse school settings to increase generalizability. Further development of the Smartbox could include digital enhancements or the integration of augmented reality to increase accessibility and adaptability. Additionally, longitudinal studies are encouraged to examine the long-term impact of Smartbox on students' character development and value internalization. Expanding its application across other subjects such as Social Studies or Religious Education may also provide valuable insights into the scalability of this instructional model.

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