

Development of Pop-Up Book Media Social Aspects in Developing Early Children's Cooperation Capability

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Abstract

Background - Early childhood is a critical period for developing foundational social skills, particularly cooperation. At this stage, children learn to interact with peers, share, take turns, and collaborate toward shared goals. However, traditional learning methods often fail to provide sufficiently engaging and interactive experiences to nurture these essential competencies.

Urgency of Research - Given the growing emphasis on 21st-century skills and the limitations of conventional instructional approaches, there is an urgent need for innovative educational media that can actively support the development of cooperation skills in young children. Addressing this need is crucial for equipping children with social capabilities that form the basis for their future academic and life success.

Research Objectives - This study aims to develop and validate a pop-up book as an educational medium to enhance the social skills of children aged 5–6 years, specifically focusing on the aspect of cooperation. The research also seeks to determine the level of suitability of the pop-up book for this age group. The subjects of this research were children aged 5–6 years at SDK Olabolo One Roof Kindergarten, assessed both individually and in groups.

Research Method - The research followed the ADDIE model: Analysis, Design, Development, Implementation, and Evaluation. Data collection techniques included documentation and questionnaires. Media validation was conducted by material experts, learning design experts, and media experts, while product testing involved both individual and small group trials with the target children. Data were analyzed using qualitative and quantitative descriptive methods.

Research Findings - Validation results show that the pop-up book is highly effective: media experts rated it "Very Valid" (88.57%), learning design experts "Valid" (83.33%), and material experts "Very Valid" (92.5%). User testing with children showed "Valid" results individually (85.71%) and "Very Valid" in small groups (94.44%). Overall, the pop-up book was declared highly suitable for use with children at SDK Olabolo One Roof Kindergarten.

Conclusion and Novelty - This research demonstrates the effectiveness of pop-up book media in fostering cooperation skills in early childhood and underscores the importance of systematic evaluation using the ADDIE model for sustainable learning media development. The study's novelty lies in the rigorous design and validation of pop-up books specifically targeted at enhancing cooperation in children aged 5–6 years through interactive, scenario-based learning, filling a gap in current early childhood education literature. *Keywords:* Pop-up Book Media, Social Aspects, Cooperation.

How to Cite:

INTRODUCTION

Early Childhood Education (ECE) is an essential caregiving and educational stimulation effort for children from birth to six years old. It aims to support their optimal physical and spiritual growth and development, preparing them for subsequent educational levels (UNESCO, 2022; Susanto, 2020). As a foundational stage preceding basic education, ECE focuses on providing educational stimulation to foster children's holistic development, both spiritual and physical, and to equip them for further education through formal, non-formal, and informal pathways (Melania et al, 2024; Zanbar, 2024). The period from 0-6 years old is often referred to as the "golden age" because it is a crucial developmental phase that significantly determines a child's future (Fitria et al, 2025). As stated in Law No. 20 of 2003 on the National Education System, ECE is conducted before primary school and can be organized in various forms: formal, non-formal, and informal (Shonkoff & Philips, 2021). Formal ECE takes place in structured institutions, while non-formal and informal education includes family-based and community-based learning (Naryawati et al, 2025). The general goal of ECE is to provide developmental stimulation and nurture potential so that children grow into individuals who believe in God Almighty, possess noble character, are healthy, knowledgeable, competent, critical, creative, innovative, independent, confident, democratic, and responsible (Mubin et al, 2025).

The implementation of ECE aims to develop children's potential from an early age as preparation for life and adaptation to their environment (Hui et al, 2022). Therefore, its execution must consider the six aspects of child development outlined in Ministry of Education and Culture Regulation No. 137 of 2014: (1) religious and moral values, (2) physical-motor skills, (3) cognitive abilities, (4) language, (5) social-emotional skills, and (6) the arts (Huda, 2020). Among these six aspects, social-emotional skills are a critically important component as they influence a child's ability to interact, collaborate, and adapt within society. In efforts to stimulate the social aspect, interactive and engaging learning media become crucial. One medium that shows great potential is pop-up book media. A pop-up book is defined as a book containing three-dimensional elements that move or emerge when a page is opened (Fajriah et al, 2022). Characteristically, pop-up books feature visually appealing images that can stand upright (Damayanti & Putra, 2021), offering motion and interaction through paper mechanisms such as folds, scrolls, sliders, tabs, or wheels (Zaniyati & Rohmani, 2024). These books include elements that move or emerge from the page, such as illustrations, letters, or numbers, and are highly suitable for children aged 5 to 6 years (Khairunnisa, 2022; Munawwarah et al, 2023; Kustiawan & Yafie, 2021). The potential of pop-up books lies not only in the clear recognition of letter symbols but also in training essential social skills such as cooperation, empathy, discussion, storytelling, and responsibility (Ayu et al, 2025).

Despite the acknowledged importance of social aspects and the potential of pop-up book media (Sinamo et al, 2024; Magfiroh & Wahyuni, 2023), significant challenges persist in practice. Based on preliminary observations conducted at TK Satap SDK Olabolo, problems were identified in the social aspect during learning activities, particularly concerning the cooperation indicator. Out of 17 observed children, only 2 were categorized as developing very well, 2 were developing as expected, 4 were still developing, and 9 had not yet developed. This condition indicates that teachers' efforts to develop children's social aspects through learning media have not been optimal. Teachers tend to use monotonous media, such as LEGO blocks, and have not widely explored other more engaging and innovative media that could better enhance social skills in early childhood. Consequently, children's attention has decreased, and their understanding of the teacher's conveyed material has been less than maximal (Zamzani et al, 2025). This problem highlights the urgency to develop more engaging and effective instructional media to stimulate children's social skills, especially in the cooperation indicator, to ensure the achievement of early childhood social development goals.

This research holds novelty (state of the art) by focusing on the development of pop-up book media specifically targeted at enhancing cooperation skills in children aged 5–6 years within the TK Satap SDK Olabolo environment, where this problem has been clearly identified and no structured media intervention exists. While previous studies (Sinamo et al., 2024; Magfiroh & Wahyuni, 2023) have shown the general feasibility of pop-up book media, this study will systematically develop and validate such media to address the specific gap in cooperation skills observed. The use of pop-up books to directly train cooperation skills through integrated interaction and narrative represents a promising approach not yet widely documented within the context of the local problem encountered.

Based on the presented background and novelty, the objective of this research is to develop social aspect pop-up book media to enhance the cooperation skills of children aged 5–6 years at TK Satap SDK

Olabololo. The urgency of this research lies in the pressing need to provide effective and engaging learning tools to address the deficit in cooperation skills among young children, which is a crucial foundation for their future academic and social success. The contribution of this research is expected to provide innovative, tested, and valid learning media for ECE teachers, particularly at TK Satap SDK Olabololo, to improve children's cooperation skills. Furthermore, the findings of this study can serve as a scientific reference for the development of similar learning media and enrich the literature on the role of visual-interactive media in the development of social skills in early childhood.

METHODS

Research design

This study employs a developmental research approach. One of the more general instructional design models used in this type of research is the ADDIE model. One of the functions of this model is to serve as a guideline for constructing effective, dynamic, and supportive research program infrastructures and instructional systems (Adeoye et al, 2024). The development model used in the creation of the pop-up book media in this study is the ADDIE model. Developmental research is oriented towards producing a specific product and then testing its effectiveness so that it is ready for real-world application (Bakker & Van Erde, 2023). The product generated in this research is pop-up book media. According to Adeoye et al (2024), the model consists of five stages: 1) Analysis, 2) Design, 3) Development, 4) Implementation, 5) Evaluation. The research or development procedure in this section includes the stages of the development process to be used. The development process involves the following phases: 1) Analysis Stage, 2) Design Stage, 3) Development Stage, 4) Implementation Stage, 5) Evaluation Stage. Product testing is intended to collect data that can be used as a basis for determining the effectiveness, efficiency, and attractiveness of the developed product (Christianto & Dwiyogo, 2020). The design of the product trial is an essential part of this phase. During testing, the product undergoes several evaluations to ensure it is genuinely suitable for early childhood learning.

Research participants

Participants of this study are 17 children aged 5-6 at TK Satap SDK Olabololo. In this study, development is conducted in two phases: individual trials and small group trials. The subjects involved in the testing phase include content experts, media experts, and kindergarten students at TK Satap SDK Olabololo. The data collected in this study consists of both qualitative and quantitative data. 1) Qualitative data refers to information about the development of the pop-up book learning media for early childhood education, including expert feedback and suggestions from content and media experts, 2) Quantitative data refers to information obtained from media validation sheets and children's observation sheets related to the use of the pop-up book media. The data collected are presented in the following table:

Table 1. Types of Data and Instruments			
Quantity of Data	Instrument	Type of Data	Notes
3	Questionnaire Form	Qualitative	
	Content Expert A1		
	Media Expert A2		
	Design Expert A3		
2	Individual Trials B	Quantitative	
	Small Group (5 people) C		

(Source: STKIP Citra Bakti, Thesis Writing Guidelines, 2020)

Data Collection Techniques

The data collection methods used in this study include: Observation Method. Observation is the foundation of all scientific knowledge. Through observation, researchers can learn about behavior (Schuster

et al, 2024). This method was used to observe whether the teacher implemented the learning process according to the planned teaching strategy and to observe children during the learning sessions. The Researcher conducted both initial trials and field trials. Interview Method: This method is used to explore opinions, feelings, attitudes, views, and thought processes, as a two-way exchange of information.

This research employed unstructured interviews, where researchers did not follow a fixed interview guide but used outlines of key questions. Documentation Method. Documentation involves the use of books, notes, or transcripts to gather data based on specific variables (Bowen, 2022) This method was used to obtain written records regarding children's behavior during the learning process. In preparing the instruments, they were developed and adjusted to fit the product being designed and to ensure evaluation was conducted appropriately. The instruments were tailored to suit their specific purposes. The instruments developed in this research include: 1) Content Expert Instrument, 2) Media Expert Instrument, 3) Design Expert Instrument, 4) Small Group Test Guidelines, 5) Individual Trial Guideline.

Data Validity & Data Analysis

Data were obtained from content experts, media experts, design experts, small group trials, and individual trials. This developmental research used two data analysis techniques: qualitative descriptive analysis and quantitative descriptive statistics. To determine the conclusion and level of achievement, validation criteria were set based on the following table:

Table 2. Media Feasibility Validation Levels

Percentage	Description
86%–100%	A. Very Valid
71%–85%	B. Valid
56%–70%	C. Fairly Valid
<55%	D. Less Valid

(Source: STKIP Citra Bakti Thesis Writing Guide)

RESULTS AND DISCUSSION

The following is a summary table of relevant articles that have been selected based on inclusion and exclusion criteria using the Covidence tool:

Table 1. Summary of Relevant Articles

Authors (Publication Year)	Title	Main Findings	Relevance to the ADDIE Model
(Pangestiti, 2018))	E.R. Development of Pop-Up Improved Book Media to Improve Social Skills of Group B Children at TK Al-Husna	cooperation, empathy, responsibility through pop-up book use	Directly relevant: and pop-up media through improved social development
Ayuningtyas, N. & Mulyani, S. (2020)	Utilization of Interactive Books to Enhance Social-Emotional Skills in Early Childhood	Interactive media fosters social-cooperation and turn-taking	Analysis & Design
Hartati, S. et al. (2021)	Social Skills Development in Early Childhood through Learning Media Innovation	Creative media (e.g., storytelling aids) enhance collaboration and group activities.	Evaluation
Sari, R.P. & Widodo, S. (2019)	Implementation of Pop-up books Thematic Pop-Up Books for Character Education in Early Childhood	Pop-up books help instill discipline, empathy, and group interaction	Design & Development

Rahmawati, (2022)	D. The Effectiveness of Pop- Cooperative play Implementation Up Storybooks on significantly improved Cooperative Play in Early through pop-up story Learners interaction	
Lestari, Y. & Wahyuni, S. (2021)	Pop-Up Book Media to Significant improvement Analysis Improve Social Interaction in peer interaction and of Kindergarten Students group play	
Marlina, L. et al. (2020)	Story-Based Learning Story-based pop-up books ADDIE Using Pop-Up Media to enhance awareness of Model Develop Social Sensitivity others' emotions in Early Childhood	Full
Nurhayati, T. & Putra, A. (2019)	The Role of Pop-Up Books Children showed more Analysis to in Stimulating Cooperative frequent helping and Evaluation Behavior in Early Learners sharing behaviors	
Wulandari, I. & Darmayanti, S. (2018)	Creative Literacy through Pop-up books encourage Analysis Pop-Up Book for Early turn-taking during reading &Evaluation Childhood Education and storytelling	
Fitriani, D. & Widiyanto, B. (2022)	Implementation of 3D Collaborative behaviors Analysis & Media in Improving (like joint problem Design Collaboration among solving) increased through Kindergarten Children 3D visual media	

The selected articles span publication years from 2020 to 2023, indicating a growing trend of interest in interactive and visual media, particularly in the context of developing social skills in early childhood. A trial process was conducted to address the research problem, specifically to examine the design and feasibility of the pop-up book media. Based on the content/material expert test, the developed pop-up book media received a "very valid" rating with a score of 92%. The highest score of 5 was given for five out of eight evaluation criteria, namely: suitability of the material to children's developmental level, ease of media use, attractiveness of the pop-up book, ability of the material to stimulate interaction with children, and alignment with the early childhood education curriculum.

The next highest score, 4, was given for three criteria: relevance of material to learning objectives and completeness of material relative to children's capabilities. The first aspect—material relevance to learning objectives—received a score of 4, consistent with Abi & Lestari (2020) who stated that learning media are anything that can be used to convey messages or learning content to stimulate children's attention, interest, thoughts, and feelings. The second aspect—material suitability with children's abilities—also scored 4, as the content matches the social development standards stated in Permendikbud No. 137 of 2014. The third aspect—material alignment with developmental level—scored 5 due to its strong alignment with children's growth stages. The fourth aspect—ease of media use—scored 5, indicating that the media is easy to use by both teachers and students, consistent with Azhura et al (2024), who emphasized the role of media in simplifying the learning process. The fifth aspect—attractiveness—scored 5, indicating that the pop-up book successfully captures children's attention. The sixth aspect—clarity of the social message—scored 4. The seventh aspect—stimulation of interaction—received a score of 5, supported by Kustiawan et al (2021), who highlighted pop-up books' capacity to stimulate interaction and imagination. The eighth aspect—curricular alignment—scored 5, affirming the media's compliance with the kindergarten curriculum.

From the media expert review, the development of the pop-up book media was also deemed "very valid" with a score of 88.57%. Three out of seven evaluation items scored 5, while the remaining four scored 4. The media expert concluded the pop-up book was feasible for use with minor revisions. The first media aspect evaluated was durability, which scored 5, indicating that the pop-up book can be stored for long-term use. The second—color attractiveness—scored 4, supported by Wahyuningsih & Afandi (2020) who noted that educational media can trigger student motivation and interest. The third aspect—practicality—also scored 4, due to its easy portability. The fourth—alignment with learning materials—scored 4. The fifth aspect—

creativity—scored 4 as well. The sixth—safety and simplicity of form—scored 5. The seventh—availability of usage instructions—also scored 5, as the book includes a guide for both educators and learners.

The instructional design expert review rated the media as "valid" with a score of 83.33%. The aspects evaluated included: 1) completeness of lesson plan elements (RPPH), 2) appropriate selection of core and basic competencies, 3) indicator formulation, 4) material-competency alignment, 5) instructional steps-competency alignment, and 6) assessment-competency alignment. Only the first aspect received a score of 5; the others received 4.

Individual trials conducted at TK Satap SDK Olabolo with three Group B children resulted in a "very valid" score, indicating strong student enjoyment and engagement. The trials aimed to assess initial responses and identify potential shortcomings. Evaluated indicators and scores included: 1) Is the pop-up book visually attractive? : very valid, 2) Are the letters legible to children? : valid (one child had difficulty), 3) Are the colors engaging? : very valid, 4) Do children enjoy the media? : very valid, 5) Do children like the media? : very valid (due to its novelty). These individual trial results confirmed that the pop-up book media enhances engagement and supports social development in early childhood education. Educational media improves learning motivation, a critical factor for young learners (Firdaus & Prasetyo, 2025). In the small-group trial, six indicators were evaluated: 1) Is special preparation required to use the media? : very valid, 2) Do children require a long time to learn with the media? : valid, 3) Do children need assistance to use the media? : very valid, 4) Can teachers use the media according to the theme? : very valid, 5) Do children enjoy using the media? : valid, 6) Can this media enhance children's social development? : very valid.

Developing Social Skills in Early Childhood

Developing social skills in early childhood is a critical aspect of comprehensive child development, encompassing emotional intelligence, interpersonal communication, and relationships with peers (Bagea et al, 2023). During this crucial period, the formation of social-emotional skills is paramount for fostering better emotional regulation and more effective interpersonal interactions among children, which in turn bolsters overall developmental outcomes (Agustriana et al, 2023). Emotional intelligence, a core component of social skills, is significantly shaped by early interactions, particularly within the family context (Hong et al, 2022). The role of parental engagement in nurturing secure attachments is vital, as children who experience secure attachments tend to display better emotional regulation and, consequently, improved social skills later in life (Rodrigues et al, 2025; Quintana et al, 2023; Bureau et al, 2021). Therefore, a foundational understanding of social skills is essential for children, as these skills influence their academic success and overall well-being throughout life (Pham, 2024; Gaspar et al, 2021). Early childhood educators also play a pivotal role in fostering children's social and emotional skills through various pedagogical practices (Blewitt et al, 2021).

Research consistently demonstrates that strong social competencies in early childhood predict a myriad of positive outcomes, extending far beyond the classroom into adolescence and adulthood (Zych & Llorent, 2020). Children with well-developed social skills are better equipped to navigate the complexities of the school environment (Taziki et al, 2021). They can collaborate effectively with peers on group projects, communicate their needs and ideas clearly to teachers, resolve conflicts constructively, and regulate their emotions in challenging situations (Salerni & Messetti, 2025). These abilities directly contribute to greater classroom engagement, improved learning outcomes, and reduced behavioral problems, creating a more conducive learning environment for themselves and others (Bierman & Sanders, 2020). Studies have shown that students with strong social-emotional skills tend to have higher academic scores, better attendance rates, and are less likely to be involved in peer problems (Durlak et al, 2022). Beyond academics, robust social skills are intrinsically linked to a child's overall well-being (Bierman & Sanders, 2020). They foster the development of positive relationships, build self-confidence, and enhance emotional resilience. The capacity to manage emotions, empathize with others, and make responsible decisions supports mental health and reduces the likelihood of future social and emotional difficulties (Li, 2025). High-quality early childhood education programs, which often integrate social-emotional development, have been shown to yield long-term benefits in pro-social skills like cooperation, empathy, and self-regulation, which in turn support cognitive development and academic achievement (Pollak et al, 2023). Therefore, the growing body of evidence strongly advocates for the intentional cultivation of social skills from an early age (Ayu et al, 2025).

Educational frameworks, particularly those emphasizing Social-Emotional Learning (SEL), recognize these competencies as equally vital to traditional academic subjects (Martinez & Gomez, 2024; Taha et al, 2025). Integrating social skill development into early childhood curricula provides children with the necessary

foundation not only for thriving in school but also for leading healthy, fulfilling, and socially connected lives as they grow (Handayani & Kaffa, 2025). This is a fundamental step in ensuring that children are not just academically intelligent, but also well-equipped to become adaptive and empowered individuals in society (Siswantini et al, 2025).

Interactive and Visual Media Social Aspect Developing Skill in Early Childhood

Interactive and visual media are increasingly recognized as powerful tools for engaging young learners and promoting various developmental outcomes (Cherif, 2025). The integration of interactive and visual media in early childhood education (ECE) has become increasingly prevalent, driven by both technological advancements and a growing understanding of how young children learn best (Wardhani et al, 2024). This form of media leverages children's natural inclination towards sensory engagement, making learning experiences more dynamic, captivating, and effective (Pham, 2024). Specifically, visual media, such as engaging illustrations, animated videos, and colorful diagrams, plays a crucial role in supporting early cognitive development (Koncz & Szuts, 2020; Li et al, 2023; Hwang et al, 2020). Young children are highly visual learners; their brains are rapidly developing, and concrete visual cues help them grasp abstract concepts, remember information more easily, and make connections between ideas (Sapargaliyeva et al, 2024). Visual aids in storybooks, flashcards, and digital displays provide a persistent reference point that spoken words cannot (Henderlong & Lepper, 2020), aiding in information processing and reducing anxiety by making routines and concepts more predictable.

Beyond more visualization, interactive media amplifies these benefits by fostering active participation and personalized learning (Xu et al, 2025). Interactive elements, whether in digital applications, game-based learning platforms, or physical pop-up books, encourage children to manipulate content, make choices, and receive immediate feedback (Wardhani et al, 2025). This active engagement promotes deeper understanding, problem-solving skills, and critical thinking. For instance, interactive multimedia, including game-based PowerPoint presentations, animated videos, and interactive e-books, have been shown to significantly improve academic abilities in reading, mathematical reasoning, and logical thinking, while simultaneously boosting learning motivation and independent learning (Firdaus & Prasetyo, 2025). The ability of interactive media to capture and sustain children's attention is particularly valuable in early childhood, where maintaining engagement is key to effective learning. While the benefits are substantial, it is crucial that the design and implementation of interactive and visual media are developmentally appropriate and balanced (Pinto & Radesky, 2020). Overexposure or poorly designed content can lead to negative outcomes such as reduced social interaction or dependency on technology (Fasoli, 2021). However, when thoughtfully integrated, interactive and visual media provide a rich, multi-sensory learning environment that supports a wide range of developmental domains, from literacy and numeracy to creativity and social-emotional growth, ultimately preparing children more effectively for future learning (Helmi et al, 2025).

Recent studies indicate that pop-up book media is highly effective in stimulating cooperation skills in early childhood (Pebriani & Vinayastri, 2022). Current articles also highlight improvements and updates in the application of the ADDIE development model, including aspects such as media design, learner engagement, and effectiveness in social learning (Adeoye et al, 2024). In the context of this study, several relevant articles demonstrate that pop-up book media has proven effective in stimulating cooperation skills in early childhood, such as the ability to work in groups, share roles, listen to peers' opinions, and complete tasks collaboratively (Hidayah, 2020). This media is not only visually appealing but also facilitates active social interaction and simple group discussions, which aligns with the cooperation skill indicators in the early childhood curriculum (PAUD) (Rusanti et al, 2023). Furthermore, the use of the ADDIE model in educational media development has been shown to be systematic and effective (Rahmandhani & Utami, 2022), as discussed in several recent publications. This model provides a flexible framework for needs analysis, content design, physical media development, and continuous testing and evaluation (Ebrahimi et al, 2025). These findings reinforce the relevance and urgency of the study titled "Development of Pop-Up Book Media on Social Aspects in Enhancing Cooperation Skills of Early Childhood" because: 1) Pop-up books have been proven to support the development of social aspects, particularly cooperation; 2) The ADDIE model as a development approach enables the creation of adaptive, engaging, and age-appropriate media for children aged 5–6 years; 3) Previous studies have shown that the development of visual media such as pop-up books can improve attention, participation, and emotional engagement of children in group learning activities (Sadan et al, 2024).

CONCLUSION

Based on the results of the research and discussion, it can be concluded that the pop-up book media is highly beneficial for early childhood. The pop-up book media can help develop children's social skills. The developed pop-up book media was tested by experts and product users. The evaluation was carried out using a questionnaire prepared by the researcher. Based on the expert evaluations: 1) The material expert assessment placed the developed product in the "Very Valid" category with a score of 92.5%, 2) The media expert evaluation also placed it in the "Very Valid" category with a score of 88.57%, 3) The instructional design expert rated it as "Valid" with a score of 83.33%, 4) The individual trial received a "Valid" rating with a score of 85.71%, 5) The small group trial resulted in a "Very Valid" rating with a score of 94.44%. Based on the trials conducted by both experts and children as end-users, the developed pop-up book media is declared feasible for use without revision.

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