



The Correlation Pop Up Book Simadu with Students attention in Natural and Sosial Sciences (IPAS) at Grade IV elementary School

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ABSTRACT

The ability of students to focus during learning is a determinant of learning success, but observations at SD Islam Ruhama Ciputat show that the dominance of the monotonous lecture method reduces the quality of learning in Natural and Social Sciences (IPAS). This study aims to examine the use of Pop-Up Book Simadu media in increasing the attention of grade IV students in IPAS learning and the relationship between the use of these media and students' learning attention. Pop-Up Book is considered as potential learning media because it can facilitate the understanding of abstract concepts with a three-dimensional format. This study used a quantitative approach with a correlational method. Data were collected through questionnaires from 26 learners. Data analysis procedures include instrument validity and reliability tests, as well as hypothesis testing using regression analysis and the F test. The results showed that the instruments used had high validity and reliability. The findings indicate a significant relationship between the use of Pop-Up Book Simadu media and increased learner attention in IPAS learning. This media is recommended as an alternative to contextual learning, especially in delivering material about the life cycle of organisms, so that learning becomes more interactive and meaningful.

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ABSTRAK

Kemampuan peserta didik untuk fokus selama pembelajaran sebagai penentu keberhasilan belajar, namun observasi di SD Islam Ruhama Ciputat menunjukkan bahwa dominasi metode ceramah yang monoton menurunkan kualitas pembelajaran Ilmu Pengetahuan Alam dan Sosial (IPAS). Penelitian ini bertujuan mengkaji penggunaan media Pop-Up Book Simadu dalam meningkatkan perhatian peserta didik kelas IV pada pembelajaran IPAS dan hubungan antara penggunaan media tersebut dengan perhatian belajar peserta didik. Pop-Up Book dinilai sebagai media pembelajaran potensial karena mampu memudahkan pemahaman konsep abstrak dengan format tiga dimensi. Penelitian ini menggunakan pendekatan kuantitatif dengan metode korelasional. Data dikumpulkan melalui kuesioner kepada 26 peserta didik. Prosedur analisis data meliputi uji validitas dan reliabilitas instrumen, serta uji hipotesis menggunakan analisis regresi dan Uji F. Hasil penelitian menunjukkan bahwa instrumen yang digunakan memiliki validitas dan reliabilitas tinggi. Temuan ini menunjukkan adanya hubungan signifikan antara penggunaan media Pop-Up Book Simadu dan peningkatan perhatian peserta didik dalam pembelajaran IPAS. Media ini direkomendasikan sebagai alternatif pembelajaran kontekstual, khususnya dalam menyampaikan materi tentang siklus hidup organisme supaya pembelajaran menjadi lebih interaktif dan bermakna.

Kata Kunci: buku pop-up; hubungan media; pembelajaran siklus makhluk hidup

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INTRODUCTION

Education plays a central role in shaping the quality of human resources, which is essential for addressing global challenges. In the context of national education, learning is the core process through which students' potential is developed (Al Mujaddid, 2024). Learning is essentially an interaction between teachers and students within a designed learning environment aimed at achieving instructional goals. Teachers, as the key figures in this process, serve not only as knowledge transmitters but also as facilitators and motivators who can create an engaging and effective learning atmosphere (Riza & Barrulwalidin, 2023; Syifaurrehman et al., 2025). However, in practice, not all teaching and learning processes can successfully generate students' interest and attention. This is particularly evident in the subject of Natural and Social Sciences (IPAS) at the elementary school level, where the learning process often becomes monotonous due to the dominant use of lecture methods. As a result, students' attention and enthusiasm for learning tend to decline (Sianipar et al., 2025; Supranto & Zakiah, 2024).

The use of instructional media greatly influences effective interaction in the learning process. Media functions as a bridge that helps students understand learning content. With the advancement of technology and the demands of 21st-century learning, the use of attractive, visual, and interactive media has become increasingly important (Burhan et al., 2024; Lubis et al., 2023). One such effective medium is the Pop-Up Book, a three-dimensional book format that offers students a more vivid, visual, and engaging learning experience. This type of media not only captures students' attention but also enhances their imagination, understanding, and involvement in the learning process (Alfiah et al., 2025; Atika & Sabina, 2025; Aziz et al., 2025). Previous studies have highlighted the relationship between students' attention and various external factors in learning. For instance, research has shown that parental attention and learning motivation significantly contribute to student engagement in learning (Susiani et al., 2022).

The use of pop-up books in storytelling activities has also been found to improve students' interest and understanding (Alviolita & Huda, 2019). Furthermore, attention plays a crucial role in children's learning development, particularly when supported by emotional involvement from their surroundings (Amelia, 2023). However, there is still a lack of research that specifically explores the relationship between the use of Pop-Up Book media and students' attention in IPAS learning, especially among fourth-grade elementary students. This gap provides a valuable opportunity for further exploration. This study aims to fill that gap by focusing on the correlation between the use of Pop-Up Book Simadu and students' attention in learning Natural and Social Sciences (IPAS). The Pop-Up Book Simadu is a specially designed instructional media that integrates three-dimensional elements with contextual and thematic Natural and Social Sciences content. This study not only addresses the need for innovative and engaging learning approaches but also contributes new insights to elementary education, particularly in enhancing student attention as a key component of successful learning.

The research emphasizes the importance of developing evidence-based instructional strategies that can effectively support diverse learning needs in contemporary elementary education settings. Based on the background above, the research problem is formulated as follows: Is there a correlation between the use of Pop-Up Book media and students' attention in IPAS learning in the fourth grade at SD Islam Ruhama? To address this question, the hypotheses proposed are: H_0 (null hypothesis) states that there is no correlation between Pop-Up Book Simadu and students' attention in IPAS learning; H_1 (alternative hypothesis) states that there is a correlation between Pop-Up Book Simadu and students' attention in IPAS learning. These hypotheses provide a clear framework for empirical investigation and statistical analysis to determine the effectiveness of interactive media in elementary education contexts.

The purpose of this study is to examine and analyze the relationship between the use of Pop-Up Book Simadu and students' attention in learning IPAS among fourth-grade students. This research is expected to provide meaningful contributions to the improvement of teaching quality in elementary education. Students are hoping to benefit from the media by increasing their interest and attention in learning Natural and Social Sciences (IPAS), especially in life cycle materials. Teachers may find that the findings enrich their teaching strategies and media choices, enabling them to address classroom challenges more effectively. Schools can utilize this study as a reference to make policy decisions aimed at improving learning processes. Furthermore, researchers and other interested parties can consider the findings as a valuable reference for similar future studies using different subjects or educational contexts.

LITERATURE REVIEW

Student Attention in Learning

Attention is an essential component in the learning process because it functions as a selection mechanism for the information received by students, both mentally and physically. In the context of cognitive psychology, attention acts as the initial gateway in information processing, determining whether an external stimulus will be further processed in short-term or long-term memory (Rodríguez-García et al., 2022). Attention is also closely related to interest, where interest can foster attention, and conversely, attention can strengthen students' interest in learning materials. In a learning situation, student attention can be observed through visual activities (looking at the teacher or media), verbal responses, mental engagement (thinking about the material), and emotional expressions (enthusiasm), all of which reflect their involvement in the learning process (Harackiewicz et al., 2016; Goldberg et al., 2021). A lack of attention can hinder the understanding of concepts, especially in subjects that are abstract, such as Natural and Social Sciences (IPAS). Therefore, teachers need to apply appropriate strategies and instructional media to attract students' attention from the beginning of the lesson (Syafawani & Utami, 2025).

Pop-Up Book as Instructional Media

Instructional media serve as tools that bridge the transfer of information from teachers to students in a more concrete, interactive, and engaging manner. In the context of 21st-century learning, instructional media are expected not only to convey content but also to stimulate students' cognitive and affective engagement (An, 2021). One medium that has gained popularity due to its visual and tactile appeal is the Pop-Up Book. This three-dimensional book is specifically designed to trigger students' imagination and help them grasp learning materials through the integration of visual, kinesthetic, and tactile elements (Alfiah et al., 2025). Its pedagogical effectiveness is supported by the Cognitive Theory of Multimedia Learning, which emphasizes that learning becomes more effective when learners process information simultaneously through visual and verbal channels (Mayer, 2024). Similarly, the Dual Coding Theory highlights the advantage of combining textual and pictorial information to improve memory retention (Mir et al., 2023). Empirical studies have demonstrated that Pop-Up Books can enhance students' focus, motivation, and overall multisensory learning experiences (Putri & Mahyuddin, 2024).

In a broader sense, any object or set of tools used to facilitate the acquisition of knowledge and skills is considered instructional media. This includes physical materials such as books and audiovisual media, as well as digital platforms such as websites and videos. The role of instructional media is not merely to transfer knowledge but also to mediate meaningful interactions between learners and content. Learning media serve as intermediaries through which educators express ideas and through which students can

better understand abstract concepts (Rais et al., 2021). Instructors are therefore encouraged to use creative and engaging media to prevent students from feeling bored during learning activities. When students are actively involved in the learning process as subjects rather than passive recipients, they are more likely to internalize and recall the information presented (Rohima, 2023). This indicates the importance of integrating instructional media into teaching strategies to support more effective and lasting learning outcomes. The main objective of instructional media is to capture students' interest and focus their attention on the learning material. This is particularly relevant in light of findings that students tend to forget orally delivered information more quickly compared to content delivered through multimodal formats (Furoida, 2020).

Learning media also influences how students perceive the subject matter and shapes their attitudes toward their learning process. By making the learning experience more enjoyable and interactive, the right media can nurture a genuine interest in the subject and increase motivation (Ali et al., 2025). Pop-up books, in particular, offer several advantages. They can foster students' love for reading, enhance their imagination and creativity, and support cognitive development through the exploration of structured visual content. This medium is not only accessible but also adaptable to different learning contexts and subjects (Aziz et al., 2025). The content presented through learning media must be clearly defined and purposefully structured to ensure instructional effectiveness. When used appropriately, pop-up books can make learning more dynamic and efficient while maintaining the expected quality standards. With the proper integration of media, the learning process becomes more flexible and can occur beyond time and spatial limitations (Izzuddin, 2021). Therefore, the use of instructional media, including pop-up books, contributes significantly to the achievement of optimal learning goals by facilitating more precise message delivery, improving student engagement, and promoting meaningful understanding of the material.

Factors Influencing Student Attention

A variety of internal and external factors influences student attention during the learning process. Internal factors include mental readiness, interest, motivation, and physical condition. External factors involve instructional strategies, the learning environment, parental involvement, and the use of instructional media that is both engaging and suited to students' characteristics (Muliani, 2022). Visual, concrete, and interactive media can serve as strong external stimuli for building student attention, especially at the elementary school level (Annisa et al., 2025). Media such as pop-up books function not only as visual aids but also as tools to enhance students' emotional and cognitive engagement. By stimulating multiple senses simultaneously, this type of media can help students grasp complex or abstract material (Aziz et al., 2025). In the context of IPAS learning, which integrates scientific and social content, the presence of media that can simplify information through visual representation plays a vital role in facilitating attention and conceptual understanding (Kamal et al., 2024).

IPAS Learning in Elementary Schools

Natural and Social Sciences (IPAS) is an integrative subject in the Merdeka Curriculum that is designed to develop students' ability to understand and manage both natural and social environments contextually. The characteristics of IPAS learning require the integration of scientific knowledge and social understanding through thematic approaches, practical activities, and problem-solving tasks (Azzahra & Nurjumiati, 2024; Purba et al., 2023). However, one of the main challenges in IPAS learning lies in the abstract and conceptual nature of the content, especially for elementary school students who are in the concrete operational stage according to Piaget's theory of cognitive development (Jamal & Dwidarti, 2025). The use of concrete media such as pop-up books becomes crucial to address this challenge. These media help students visualize difficult concepts, relate the material to their everyday experiences, and enhance

their interest and attention in learning. Therefore, pop-up books hold great potential to support the effective and meaningful achievement of IPAS competencies (Wijayanti et al., 2025).

METHODS

This study employed a quantitative approach with a correlational research design. This approach was selected because the study aimed to examine the relationship between the use of Pop-Up Book Simadu and students' attention in IPAS learning. The correlational method was used to determine the strength and direction of the relationship between the two observed variables. The research design applied in this study was a quasi-experimental design involving two groups: an experimental class and a control class. The experimental class received instruction using the Pop-Up Book Simadu, while the control class did not receive any treatment. Data were collected through a post-test questionnaire to measure students' attention levels after the learning session.

The population in this study consisted of all fourth-grade students at SD Islam Ruhama, which included only one class, class IV-C, with a total of 26 students. A saturated sampling technique was employed, where the entire population was taken as the sample due to its relatively small size (<100). As a result, the sample used in this study included 25 students from class IV-C. The Pop-Up Book Simadu was developed based on fourth-grade IPAS material, specifically on the topic "The Life Cycle of Living Beings." The implementation process was divided into several stages, starting from preparation to evaluation. During the preparation stage, the researcher obtained permission from the school and consulted with the classroom teacher. During implementation, the media were presented progressively, including the cover page, introduction, learning objectives (KI-KD), 3D pop-up illustrations for content delivery, and a quiz for evaluation.

The main instrument used in this study was a structured questionnaire designed to measure students' attention as the dependent variable. The questionnaire consisted of 30 closed-ended items built around four indicators: interest, desire, engagement, and enjoyment. In addition, expert validation forms were used to evaluate the media and content, focusing on graphical feasibility, material relevance, and alignment with instructional goals. Validity testing for the questionnaire items was conducted using the Pearson Product-Moment correlation with the aid of SPSS. An item was deemed valid if its calculated *r*-value exceeded the *r*-table value. Reliability testing was conducted using the Cronbach's Alpha method, with a coefficient above 0.6 indicating that the instrument was reliable.

Data were collected through the administration of the attention questionnaire after the lesson, utilizing the Pop-Up Book. Additionally, students completed a short quiz embedded in the media, which served as a supplementary measure of learning comprehension. Both sets of data contributed to a more robust analysis of student attention. Data analysis included several steps: (1) descriptive presentation of the questionnaire results; (2) normality testing using the Kolmogorov-Smirnov test, where data were considered normal if $p > 0.05$; and (3) homogeneity testing using Levene's Test, where $p > 0.05$ indicated equal variance. Next, (4) hypothesis testing was conducted using an F-test to compare attention levels between the experimental and control groups. Finally, the strength of the relationship between the media and students' attention was determined using the coefficient of determination and Fisher's test with the following formula:

$$f = \frac{R^2/(n-1)}{(1-R^2)/(n-k)}$$

Information:

R^2 : coefficient of determination

n : number of data points

k : number of independent variables

RESULTS AND DISCUSSION

Descriptive Statistics

This study involved 26 fourth-grade students from SD Islam Ruhama Labschool of Uhamka as participants. The data collection was conducted using a structured questionnaire designed to measure students' attention levels after implementing the Pop-Up Book Simadu media in IPAS learning.

Table 1. Descriptive Statistics of Fourth-Grade Students' Attention

Statistical Measure	Score	Value
N (Valid)	26	26
Minimum	12	60
Maximum	16	80
Mean	13.85	69.23
Standard Deviation	1.617	8.086

Source: Research 2025

Table 1 presents descriptive statistics of students' attention scores after learning with the Pop-Up Book Simadu media. The total number of valid participants was 26. The minimum raw score obtained was 12, while the maximum was 16. These raw scores correspond to percentage scores ranging from 60% to 80%. The average score (mean) was 13.85, equivalent to 69.23% in percentage terms. The standard deviation was 1.617 in raw scores and 8.086 in percentage scores, indicating moderate variation in students' attention levels. The distribution suggests that most students performed near the average, with a slightly higher frequency at the lower end (score 12).

Instrument Testing Results

Validity testing was conducted using Pearson product-moment correlation with SPSS software. The r-table value for 26 participants at 5% significance level was 0.3739. All 20 questionnaire items demonstrated validity, with r-calculated values ranging from 0.384 (P7) to 0.876 (P2), all exceeding the r-table threshold. The significance values for all items were below 0.05, with most items showing significance at the 0.000 level, indicating strong validity. The highest correlation was found in item P2 ($r = 0.876$), while the lowest valid correlation was in item P7 ($r = 0.384$, $p = 0.053$).

Table 2. Reliability Test Results

Cronbach's Alpha	N of Items	Status
0.759	20	Reliable

Source: Research 2025

Table 2 shows the reliability analysis of the 20-item attention questionnaire using Cronbach's Alpha. The result yielded a reliability coefficient of 0.759, which exceeds the commonly accepted threshold of 0.6 for social science research. This indicates that the questionnaire has acceptable internal consistency and is considered reliable for measuring students' attention.

Statistical Assumption Testing

The Kolmogorov-Smirnov normality test revealed a significance value of 0.004 ($p < 0.05$), indicating that the data distribution was not normal. This finding suggests that the residuals in the regression model do not follow a normal distribution pattern.

Table 3. Homogeneity Test Results (Levene's Test)

Test Basis	Levene Statistic	df1	df2	Sig.
Based on Mean	0.456	2	23	0.640
Based on Median	2.959	2	23	0.072
Based on Median (adjusted df)	2.959	2	19.533	0.076
Based on Trimmed Mean	0.498	2	23	0.614

Source: Research 2025

Table 3 presents the results of the homogeneity test using Levene's Test. This test assesses whether the variances among groups are equal. All significance values in the table are above 0.05, ranging from 0.072 to 0.640. The most conservative result, based on the median with adjusted degrees of freedom, shows a p-value of 0.076. Since all values exceed the 0.05 threshold, it can be concluded that the assumption of homogeneity of variances is met, allowing further statistical analysis to proceed.

Regression Analysis and Hypothesis Testing

Table 4. Simple Linear Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta			
(Constant)	3.458	2.847			1.215	0.237
Total_X	0.901	0.102	0.874		8.845	0.000

Source: Research 2025

Table 4 shows the results of simple linear regression analysis to determine the relationship between the use of Pop-Up Book media (independent variable) and students' attention (dependent variable). The regression equation obtained is:

$$Y = 3.458 + 0.901(X)$$

The constant value of 3.458 represents the baseline level of attention when there is no media intervention. The regression coefficient ($B = 0.901$) indicates a strong and positive relationship; for each unit increase in the use of the Pop-Up Book, students' attention increases by 0.901 points. The t-value for the variable is 8.845, with a significance level of 0.000, confirming that the relationship is statistically significant.

Table 5. ANOVA Results for Hypothesis Testing

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	629.154	1	629.154	78.237	0.000
Residual	192.885	24	8.037		
Total	822.038	25			

Source: Research 2025

Table 5 presents the results of the ANOVA test for the regression model. The F-value obtained is 78.237, with a significance level of 0.000. This value is significantly higher than the critical F-value (approximately 4.26 at $df_1 = 1$ and $df_2 = 24$), indicating that the model is statistically significant. Therefore, the regression model reliably explains the variation in students' attention based on the implementation of the Pop-Up Book Simadu media.

Table 6. Model Summary and Coefficient of Determination

Model	R	R Square	Adjusted R Square	Std. Error of Estimate
1	0.874	0.764	0.754	2.835

Source: Research 2025

Table 6 summarizes the regression model. The correlation coefficient (R) is 0.874, indicating a strong positive relationship between the Pop-Up Book media and students' attention. The coefficient of determination (R^2) is 0.764, meaning that the use of the Pop-Up Book Simadu can explain 76.4% of the variance in students' attention. The adjusted R^2 value of 0.754 accounts for the number of predictors and confirms the stability of the model. The standard error of estimate (2.835) indicates the average deviation of observed values from the predicted regression line.

Discussion

The results of this study demonstrate a statistically significant and strong positive relationship between the use of Pop-Up Book Simadu media and students' attention in Natural and Social Sciences (IPAS) learning among fourth-grade elementary students. The coefficient of determination ($R^2 = 0.764$) indicates that the implementation of Pop-Up Book Simadu can explain 76.4% of the variance in students' attention. In comparison, the remaining 23.6% is attributed to other factors not examined in this study. The regression equation $Y = 3.458 + 0.901(X)$ reveals that each unit increase in Pop-Up Book media usage corresponds to a 0.901 unit increase in students' attention levels, demonstrating a substantial positive impact. The F-test results ($F = 78.237$, $p < 0.001$) provide compelling evidence to reject the null hypothesis, confirming that there is indeed a significant correlation between Pop-Up Book Simadu usage and students' attention in Natural and Social Sciences learning. This finding aligns with the theoretical framework of the Cognitive Theory of Multimedia Learning, which emphasizes that learning becomes more effective when information is processed through both visual and verbal channels simultaneously (Mayer, 2024).

The three-dimensional, interactive nature of Pop-Up Book Simadu engages multiple sensory modalities, thereby enhancing students' cognitive processing and attention retention. The descriptive statistics reveal interesting patterns in student responses, with attention scores ranging from 60% to 80% and a mean of 69.23%. The relatively balanced distribution across three score levels (60%, 70%, and 80%) suggests that the Pop-Up Book media was effective across students with varying baseline attention capabilities. This finding is particularly significant given that elementary students are in Piaget's concrete operational stage, where they benefit most from tangible, manipulative learning materials that make abstract concepts more concrete and accessible (Jamal & Dwidarti, 2025). The findings of this study are consistent with several previous investigations that have explored the relationship between interactive media and student engagement. The results align with research, which found that Pop-Up Book Simadu in storytelling activities improved students' interest and understanding (Alviolita & Huda, 2019). Similarly, the strong correlation coefficient ($R = 0.874$) obtained in this study supports the conclusion that Pop-Up Book Simadu enhances students' focus, motivation, and overall multisensory learning experiences (Putri & Mahyuddin, 2024).

The effectiveness of Pop-Up Book media demonstrated in this study is further supported by recent empirical evidence, which concluded that Pop-Up Book usage significantly increases motivation, engagement, and learning outcomes in elementary science education (Zaniyati & Rohmani, 2024). Their findings that Pop-Up Book Simadu introduces abstract concepts through visual-interactive methods to achieve higher student attention at the elementary level directly corroborate the strong attention-media relationship ($R^2 = 76.4\%$) found in this study. This convergence of evidence across different science-related subjects strengthens the validity of Pop-Up Book Simadu as an effective instructional tool for elementary education. These results further validate the theoretical foundation provided by the Dual Coding Theory, as the combination of textual and pictorial information in Pop-Up Book Simadu appears to improve memory retention and attention engagement (Mir et al., 2023). This theoretical framework is reinforced by findings from a literature review confirming that interactive digital media, including e-books and multimedia applications, can enhance student engagement, curiosity, learning interest, and adaptation to various learning styles (Chusna et al., 2024).

Their emphasis on multisensory media (visual, kinesthetic) provides theoretical support for how Pop-Up Book Simadu functions to increase attention through multiple sensory modalities. Particularly compelling evidence comes from a quasi-experimental study demonstrating that Pop-Up Book Simadu significantly improved reading skills among second-grade elementary students, with experimental group post-test scores substantially higher than control group scores (81.56 vs. 65.38, $p < 0.001$) (Sunarti et al., 2023). This finding is directly comparable to the present study's results, as both demonstrate significant positive effects of Pop-Up Book interventions on student learning outcomes. The statistical significance ($p < 0.001$) aligns with the highly significant F-test results ($p < 0.001$) obtained in this study, providing convergent validity for the effectiveness of Pop-Up Book media across different academic domains. However, this study contributes unique insights by demonstrating the effectiveness of Pop-Up Book media specifically in Natural and Social Sciences learning, an integrative subject that presents particular challenges due to its interdisciplinary nature, combining natural phenomena and social concepts (Azzahra & Nurjumiati, 2024).

The findings support evidence that visual, concrete, and interactive media serve as strong external stimuli for building student attention at the elementary level (Annisa et al., 2025). The high explained variance (76.4%) found in this study is notably higher than typical educational intervention studies, suggesting that Pop-Up Book Simadu may be particularly well-suited for elementary Natural and Social Sciences instruction. The results also corroborate findings regarding the significance of external factors in student engagement, while extending this understanding to include instructional media as a critical component (Susiani et al., 2022). The strong positive relationship identified in this study provides empirical support for theoretical assertions about attention serving as an essential gateway in information processing (Rodríguez-García et al., 2022). The findings have several important implications for elementary education practice. The strong positive relationship between Pop-Up Book media and student attention suggests that educators should consider incorporating three-dimensional, interactive materials into their Natural and Social Sciences instruction. Given that 76.4% of attention variance can be explained by Pop-Up Book usage, this medium represents an up-and-coming tool for addressing the challenge of maintaining student engagement in integrated natural and social sciences content.

The empirical evidence from multiple studies reinforces the pedagogical value of Pop-Up Book Simadu across various elementary subjects. Significant improvement in reading skills has been demonstrated in previous research (Sunarti et al., 2023). Enhanced motivation and engagement have also been reported, suggesting that Pop-Up Book Simadu offers cross-curricular benefits that extend beyond individual subject areas (Zaniyati & Rohmani, 2024). This indicates that teachers can implement Pop-Up Book strategies with confidence that they will positively impact multiple learning domains simultaneously. The results

support the integration of multisensory learning approaches in elementary classrooms, particularly for subjects like Natural and Social Sciences that require students to grasp both concrete scientific concepts and abstract social phenomena. The theoretical support regarding interactive media's ability to accommodate various learning styles further reinforces the practical value of implementing Pop-Up Book interventions (Chusna et al., 2024). Teachers can use these findings to justify investments in interactive instructional materials and to advocate for professional development opportunities focused on multimedia instruction techniques.

Furthermore, the consistency of positive results across different research contexts, such as science learning, reading skills, and student attention in Natural and Social Sciences, suggests that Pop-Up Book Simadu represents a flexible instructional strategy adaptable to various educational objectives. This versatility is especially valuable in resource-limited educational settings where materials that serve multiple instructional purposes are needed. This study also provides empirical support for several educational theories. The strong positive correlation found supports the applicability of the Cognitive Theory of Multimedia Learning and the Dual Coding Theory within the elementary education context. The findings contribute to the growing body of literature supporting constructivist approaches that emphasize student interaction with learning materials. Converging evidence from recent studies strengthens these theoretical frameworks. The effectiveness of Pop-Up Book Simadu in presenting abstract concepts through visual and interactive methods provides additional support for multimedia learning theories and improves elementary students' visual literacy (Hadiapurwa et al., 2021; Zaniyati & Rohmani, 2024). A related literature review also reinforces the theoretical foundation for multisensory learning by showing how interactive media can accommodate diverse learning modalities and cognitive styles (Chusna et al., 2024). Further theoretical relevance is offered through quasi-experimental evidence that showed measurable improvements in student outcomes as a result of Pop-Up Book use (Sunarti et al., 2023).

The study reported significantly higher post-test scores for the experimental group compared to the control group (81.56 vs. 65.38), which underscores the value of visual and tactile learning experiences in supporting memory and understanding. These findings validate theoretical claims that concrete learning aids improve comprehension, particularly for young learners in the concrete operational stage of development. The results also contribute to attention theory by illustrating how external instructional media, such as Pop-Up Book Simadu, can enhance cognitive focus during learning activities. The consistency of these positive effects across studies indicates that the ability of Pop-Up Book Simadu to attract and maintain attention is both theoretically predictable and practically applicable. This expands the understanding of attention as a cognitive process that can be intentionally supported through appropriate instructional design. At the institutional level, these findings suggest that schools should consider allocating resources toward innovative instructional media that support multisensory learning experiences. The substantial effect size observed in this study provides evidence-based justification for curriculum modifications that incorporate interactive media into Natural and Social Sciences instruction. Regarding curriculum developers, the results indicate that learning materials designed with three-dimensional, manipulative elements may be particularly effective for elementary students, highlighting the need for continued development and evaluation of interactive educational resources that align with cognitive development principles.

Several limitations must be acknowledged in interpreting these findings. The study's sample size of 26 students from a single class restricts generalizability and external validity, requiring future research with larger, more diverse samples across multiple educational contexts. Methodological concerns arise from the non-normal data distribution ($p = 0.004$), which may affect statistical inference precision despite meeting homogeneity assumptions, suggesting the need for alternative analytical approaches in subsequent studies. The correlational design, while appropriate for examining relationships, cannot establish causality between Pop-Up Book Simadu and student attention, as confounding variables may

influence this relationship, necessitating more rigorous experimental designs with control groups and randomization. Additionally, reliance on self-report questionnaires may introduce response bias among elementary students with limited metacognitive awareness, indicating the need for objective attention measures such as behavioral observations or physiological indicators. Finally, the study's focus on immediate post-intervention effects does not address long-term sustainability, requiring longitudinal research to examine the persistence of attention improvements over time.

CONCLUSION

This study successfully addresses the research question regarding the correlation between Pop-Up Book media usage and students' attention in Natural and Social Sciences (IPAS) learning among fourth-grade students at SD Islam Ruhama. The statistical analysis provides compelling evidence to reject the null hypothesis (H_0) and accept the alternative hypothesis (H_1), confirming that there is indeed a significant correlation between Pop-Up Book Simadu and students' attention in Natural and Social Sciences learning. The findings demonstrate a strong positive relationship between the implementation of Pop-Up Book media and increased student attention levels, indicating that this interactive instructional medium serves as an effective tool for enhancing student engagement in integrated natural and social sciences learning at the elementary level. The study fulfills its purpose of examining and analyzing the relationship between Pop-Up Book Simadu and students' attention, offering meaningful contributions to elementary education quality improvement. Students benefit from this research as it confirms that Pop-Up Book media effectively increases interest and attention in Natural and Social Sciences learning through multisensory engagement that aligns with concrete operational learning preferences. Teachers gain evidence-based justification from these findings to incorporate three-dimensional, interactive materials into their instructional strategies, offering enriched media choices that address classroom engagement challenges more effectively. Schools can utilize this research as valuable reference material to make policy decisions aimed at improving learning processes through innovative instructional media adoption. The convergent evidence from multiple recent studies reinforces the theoretical foundation that interactive, visual-tactile learning materials significantly enhance elementary students' cognitive engagement and attention retention. Future research should focus on replication studies with larger, more diverse samples across multiple schools and geographic regions to enhance generalizability. At the same time, longitudinal designs are needed to examine the persistence of attention improvements over time. Experimental studies with randomized control groups would strengthen causal inferences, and multi-method approaches incorporating objective behavioral observations and physiological indicators would provide a more comprehensive understanding of media-attention relationships. Investigation of mediating variables such as learning styles, prior knowledge, and classroom context, along with cost-effectiveness analyses of implementation feasibility, would further inform evidence-based educational policy and practice decisions regarding Pop-Up Book media adoption in elementary education settings.

AUTHOR'S NOTE

The author declares that there is no conflict of interest regarding the publication of this article. The author confirms that the data and content of the article are free from plagiarism.

REFERENCES

- Al Mujaddid, N. S. (2024). Pendidikan dan pengembangan sumber daya insani. *Al-Istimrar: Jurnal Ekonomi Syariah*, 3(1), 48-70.
- Alfiah, N., Aranah, S. N., & Asmiarti, M. (2025). Pengembangan media pembelajaran pop-up book pada mata pelajaran Pkn Kelas III SD N 1 Pardasuka Timur. *Menulis: Jurnal Penelitian Nusantara*, 1(5), 420-424.
- Ali, A., Venica, S. D., Aini, W., & Hidayat, A. F. (2025). Efektivitas media pembelajaran interaktif dalam meningkatkan minat dan motivasi belajar siswa sekolah dasar. *Journal of Information System and Education Development*, 3(1), 1-6.
- Alviolita, N. W., & Huda, M. (2019). Media pop-up book dalam pembelajaran bercerita. *Jurnal Pendidikan Bahasa Indonesia*, 7(1), 49-57.
- Amelia, L. (2023). Pengaruh kurangnya perhatian orang tua terhadap perkembangan belajar siswa kelas 1 SD. *Jurnal Pendidikan dan Kebudayaan (Jurdikbud)*, 3(2), 186-193.
- An, Y. (2021). A history of instructional media, instructional design, and theories. *International Journal of Technology in Education*, 4(1), 1-21.
- Annisa, R., Ramadani, F., & Haliq, A. (2025). Inovasi pembelajaran dengan media visual: Studi pengalaman di sekolah dasar. *Pendas: Jurnal Ilmiah Pendidikan Dasar*, 10(2), 379-389.
- Atika, M., & Sabina, M. (2025). Pengembangan media pop-up book berbasis 3D pada materi nilai-nilai Pancasila. *Menulis: Jurnal Penelitian Nusantara*, 1(6), 536-539.
- Aziz, M. N., Faroka, H., Ananda, R. S., Apriliani, M., & Asih, N. S. (2025). Inovasi desain pop-up book dalam pendidikan visual: Tinjauan literatur terstruktur. *Menulis: Jurnal Penelitian Nusantara*, 1(6), 829-832.
- Azzahra, F., & Nurjumiati, N. (2024). Pengaruh model pembelajaran kooperatif tipe STAD berbantuan media Pop Up Book terhadap hasil belajar IPA SDN Inpres 2 Lanta. *Galaxy: Jurnal Pendidikan MIPA dan Teknologi*, 1(2), 38-42.
- Burhan, A., Pattaufi, P., Febriati, F., Hakim, A., Anwar, C. R., & Wahira, W. (2024). Development of hypercontent-based teaching materials for screen printing course at FIP UNM. *Inovasi Kurikulum*, 21(3), 1481-1496.
- Chusna, N. L. L. U., Khasanah, U., & Najikhah, F. (2024). Interactive digital media for learning in primary schools. *Asian Pendidikan*, 4(2), 72-78.
- Furoidah, A. (2020). Media pembelajaran dan peran pentingnya dalam pengajaran dan pembelajaran bahasa Arab. *Al-Fusha: Arabic Language Education Journal*, 2(2), 63-77.
- Goldberg, P., Sümer, Ö., Stürmer, K., Wagner, W., Göllner, R., Gerjets, P., Kasneci, E., & Trautwein, U. (2021). Attentive or not? Toward a machine learning approach to assessing students' visible engagement in classroom instruction. *Educational Psychology Review*, 33(1), 27-49.
- Hadiapurwa, A., Listiana, A., & Efendi, E. E. (2021). Digital flipbook as a learning media to improve visual literacy for 4th grade students at SDN Abdi Negara. *Jurnal Ilmu Informasi Perpustakaan dan Kearsipan*, 10(1), 8-13.

- Harackiewicz, J. M., Smith, J. L., & Priniski, S. J. (2016). Interest matters: The importance of promoting interest in education. *Policy Insights from the Behavioral and Brain Sciences*, 3(2), 220-227.
- Izzuddin, A. (2021). Upaya mengembangkan kemampuan kognitif anak usia dini melalui media pembelajaran sains. *Edisi*, 3(3), 542-557.
- Jamal, M., & Dwidarti, F. (2025). Tingkat validitas media komik pop-up book pada materi Matematika sekolah dasar. *Al-Irsyad Journal of Mathematics Education*, 4(2), 268-282.
- Kamal, A. L., Ali, M. K., Safitri, D., & Sujarwo, S. (2024). Penggunaan media pop-up book pada pembelajaran ilmu pengetahuan sosial dalam meningkatkan hasil belajar siswa. *Jurnal Teknologi Pendidikan*, 1(3), 1-12.
- Lubis, L. H., Febriani, B., Yana, R. F., Azhar, A., & Darajat, M. (2023). The use of learning media and its effect on improving the quality of student learning outcomes. *International Journal of Education, Social Studies, and Management (IJESSM)*, 3(2), 7-14.
- Mayer, R. E. (2024). The past, present, and future of the cognitive theory of multimedia learning. *Educational Psychology Review*, 36(1), 1-25.
- Mir, K. J., Fatima, S. A., & Fatima, S. T. (2023). Impact of dual coding strategy to enhance students' retention of scientific concepts in middle schools. *Annals of Human and Social Sciences*, 4(4), 655-666.
- Muliani, R. D. (2022). Faktor-faktor yang mempengaruhi minat belajar peserta didik. *Jurnal Riset dan Pengabdian Masyarakat*, 2(2), 133-139.
- Purba, P., Rahayu, A., & Murniningsih, M. (2023). Penerapan kurikulum merdeka pada pembelajaran IPAS kelas IV di SD Negeri Tahunan Yogyakarta. *Bulletin of Educational Management and Innovation*, 1(2), 136-152.
- Putri, V. M., & Mahyuddin, N. (2024). Development of pop-up book media based on multisensory for scientific literacy of early childhood. *Jurnal Ilmiah Potensia*, 9(1), 48-59.
- Rais, M., Yaumi, M., & Yusuf, T. M. (2024). Studi literatur terminologi media dan teknologi pembelajaran (Sejarah dan perbedaan istilah). *Aksiologi: Jurnal Pendidikan dan Ilmu Sosial*, 5(1), 244-257.
- Riza, S., & Barrulwalidin, B. (2023). Ruang lingkup metode pembelajaran. *Islamic Pedagogy: Journal of Islamic Education*, 1(2), 120-131.
- Rodríguez-García, L., de la Cruz-Campos, J. C., Martín-Moya, R., & González-Fernández, F. T. (2022). Active teaching methodologies improve cognitive performance and attention-concentration in university students. *Education Sciences*, 12(8), 544-556.
- Rohima, N. (2023). Penggunaan media pembelajaran untuk meningkatkan keterampilan belajar pada siswa. *Seri Publikasi Pembelajaran*, 1(1), 1-12.
- Sianipar, A. D. S., Suyanti, R. D., & Rajagukguk, W. (2025). Development of IPAS worksheets using augmented reality to enhance critical thinking skills. *Inovasi Kurikulum*, 22(3), 1459-1474.
- Sunarti, S., Anggraini, D., Sarie, D. P., & Jana, P. (2023). The effectiveness of pop-up book media in learning reading skills of grade 2 elementary school. *Jurnal Cakrawala Pendidikan*, 42(2), 493-506.
- Suprasmanto, J., & Zakiyah, S. W. (2024). Analisis permasalahan pembelajaran IPAS pada siswa kelas 4 SD. *Jurnal Belaindika (Pembelajaran dan Inovasi Pendidikan)*, 6(2), 199-204.

- Susiani, T. S., Amalia, L. R., Salimi, M., Fauziah, M., & Hidayah, R. (2022). The effect of parental attention and learning motivation on learning outcomes of elementary school students. *European Journal of Humanities and Social Sciences*, 2(5), 1-8.
- Syafawani, U. R., & Utami, I. I. S. (2025). Perspektif guru: Pengembangan pemahaman konsep abstrak siswa melalui implementasi model pembelajaran concept learning pada mata pelajaran IPS. *Jurnal Pengajaran Sekolah Dasar*, 4(1), 57-78.
- Syifaurrehman, S., Fiqriani, M., Karoma, K., & Idi, A. (2025). Strategi mengajar yang efektif dan peran guru sebagai kunci pembelajaran bermakna. *Jurnal Penelitian Ilmu Pendidikan Indonesia*, 4(1), 244-254.
- Wijayanti, A., Sudirman, S., Hakim, M., & Nurwahidah, N. (2025). Pengembangan media pembelajaran flashcard berbasis pop-up pada materi perubahan wujud benda pembelajaran IPAS kelas IV. *Pendas: Jurnal Ilmiah Pendidikan Dasar*, 10(2), 251-264.
- Zaniyati, M., & Rohmani, R. (2024). Analysis of the effectiveness of pop-up book media on science learning in elementary schools. *Ijorer: International Journal of Recent Educational Research*, 5(4), 919-934.