

Constructivist Visual Learning in Social Studies Education: The Role of Pop-Up Book Media in Enhancing Student Motivation and Achievement

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Dikirim: 29-05-2026; Direvisi: 31-07-2026; Diterima: 02-08-2026

Abstract: This study aimed to examine the effectiveness of constructivist visual learning through pop-up book media in enhancing students' learning motivation and academic achievement in Social Studies at the junior high school level. The study was motivated by persistent challenges in Indonesian education, particularly low literacy competence, weak learning motivation, and unsatisfactory Social Studies learning achievement, which are closely associated with conventional teacher-centered instructional practices. Grounded in constructivist learning theory and John Dewey's pragmatist philosophy of experiential learning, this study conceptualizes the pop-up book as a visual-interactive instructional medium that promotes active student engagement and meaningful learning experiences. A quantitative approach employing a pre-experimental one-group pretest-posttest design was adopted. The participants consisted of 32 eighth-grade students from SMP Negeri 32 Semarang, selected using purposive sampling. Data were collected through learning motivation questionnaires, pretest-posttest achievement tests, classroom observations, and documentation. All research instruments were validated and tested for reliability prior to data collection. Data were analyzed using descriptive statistics, a paired-sample t-test, Normalized Gain (N-Gain) analysis, and effect size analysis with IBM SPSS Statistics 26. The findings revealed significant improvements in both students' learning motivation and academic achievement following the implementation of pop-up book-based instruction. The mean motivation score increased from 68.36 to 84.25, while the mean Social Studies achievement score improved from 70.00 to 83.75. The paired-sample t-test yielded a significance value of 0.000 ($p < 0.05$), indicating a statistically significant effect of the instructional intervention. Furthermore, the N-Gain and effect size analyses demonstrated moderate-to-high improvement with a strong practical effect. These findings indicate that pop-up book media constitute an effective constructivist visual learning strategy for enhancing students' learning motivation, academic achievement, active engagement, and contextual understanding in Social Studies education.

Keywords: constructivist learning; pop-up book; social studies education; learning motivation; learning achievement.

Abstrak: Penelitian ini bertujuan menganalisis efektivitas pembelajaran visual berbasis konstruktivisme melalui media *pop-up book* dalam meningkatkan motivasi dan hasil belajar siswa pada mata pelajaran Ilmu Pengetahuan Sosial (IPS) di tingkat Sekolah Menengah Pertama. Penelitian ini dilatarbelakangi oleh rendahnya kompetensi literasi, motivasi belajar, dan hasil belajar IPS siswa yang masih dipengaruhi oleh praktik pembelajaran konvensional berpusat pada guru. Berlandaskan teori konstruktivisme serta filsafat pragmatisme John Dewey tentang *experiential learning*, penelitian ini memposisikan *pop-up book* sebagai media visual-interaktif yang mampu mendorong keterlibatan aktif dan pembelajaran bermakna. Penelitian menggunakan pendekatan kuantitatif dengan desain *pre-experimental one-group pretest-posttest*. Partisipan penelitian berjumlah 32 siswa kelas VIII SMP Negeri 32 Semarang yang dipilih melalui teknik *purposive sampling*. Data dikumpulkan

menggunakan angket motivasi belajar, tes *pretest-posttest*, observasi, dan dokumentasi. Seluruh instrumen telah memenuhi uji validitas dan reliabilitas. Analisis data dilakukan melalui statistik deskriptif, *paired sample t-test*, analisis *Normalized Gain (N-Gain)*, dan *effect size* menggunakan IBM SPSS Statistics 26. Hasil penelitian menunjukkan peningkatan yang signifikan pada motivasi dan hasil belajar setelah penerapan pembelajaran berbasis *pop-up book*. Rata-rata motivasi belajar meningkat dari 68,36 menjadi 84,25, sedangkan rata-rata hasil belajar IPS meningkat dari 70,00 menjadi 83,75. Hasil *paired sample t-test* menunjukkan nilai signifikansi 0,000 ($p < 0,05$), sedangkan analisis *N-Gain* dan *effect size* mengindikasikan peningkatan pada kategori sedang hingga tinggi dengan dampak praktis yang kuat. Temuan ini menunjukkan bahwa media *pop-up book* merupakan strategi pembelajaran visual berbasis konstruktivisme yang efektif dalam meningkatkan motivasi, hasil belajar, keterlibatan aktif, dan pemahaman kontekstual siswa pada pembelajaran IPS.

Kata Kunci: pembelajaran konstruktivistik; *pop-up book*; pendidikan IPS; motivasi belajar; hasil belajar.

INTRODUCTION

The transformation of twenty-first-century education has shifted the orientation of learning from merely acquiring knowledge to developing competencies that enable students to adapt to rapid social, economic, and technological changes. Literacy, critical thinking, creativity, communication, collaboration, and problem-solving have become essential competencies that should be fostered through school learning processes (Partnership for 21st Century Learning [P21], 2019; UNESCO, 2021). Within this framework, education is no longer viewed as a process of transmitting information from teachers to students but rather as a process of knowledge construction that encourages learners to become active participants who are able to connect their learning experiences with real-life situations (OECD, 2023). This paradigm shift requires all school subjects, including Social Studies, to provide contextual, participatory, and meaningful learning experiences capable of cultivating critical, reflective, and socially responsible citizens.

In this context, Social Studies occupies a strategic position because its purpose extends beyond developing students' understanding of social concepts to fostering their ability to comprehend human relationships, analyze social dynamics, and make rational decisions based on the principles of democracy, justice, and humanity (Sapriya, 2017). As an interdisciplinary subject integrating history, geography, economics, and sociology, Social Studies requires students to possess strong literacy competencies, including the ability to read and interpret information, analyze social phenomena, and connect multiple concepts critically and contextually. Consequently, the success of Social Studies instruction should not merely be measured by students' ability to recall factual information but also by their capacity to construct meaning, develop higher-order reasoning, and apply acquired knowledge to authentic social contexts (National Council for the Social Studies [NCSS], 2013). Therefore, Social Studies education plays a significant role in promoting twenty-first-century competencies, particularly social literacy and critical social thinking.

Nevertheless, international educational reports consistently indicate that students' literacy achievement in Indonesia remains a major challenge for national educational development. The Programme for International Student Assessment (PISA) 2022 reported that Indonesian students achieved an average reading literacy



score of only 359, substantially lower than the OECD average of 476 (OECD, 2023). This finding suggests that many Indonesian students continue to experience difficulties in comprehending written information, evaluating textual content, and integrating information from multiple sources to construct deeper understanding. This concern is reinforced by UNESCO's *Global Education Monitoring Report*, which highlights that the post-pandemic learning crisis has significantly reduced literacy achievement across many developing countries, including Indonesia, primarily due to limited student engagement and insufficient pedagogical innovation capable of creating meaningful learning experiences (Antoninis et al., 2023). Furthermore, Statistics Indonesia (BPS, 2023) reported that the functional literacy rate among Indonesian adolescents reached only 65.7%, indicating that literacy challenges extend beyond basic reading skills to include students' ability to understand, interpret, and effectively apply information across diverse contexts. These challenges are particularly critical in Social Studies education because the subject heavily depends on students' abilities to read, interpret, and synthesize complex, dynamic, and multidimensional social phenomena.

The low level of literacy has direct implications for the quality of Social Studies instruction in schools. Unlike subjects primarily oriented toward procedural skills or numerical calculations, Social Studies requires students to read various sources of information, understand cause-and-effect relationships among historical and social events, interpret social phenomena, and integrate concepts from history, geography, economics, and sociology into a coherent understanding (Sapriya, 2017). Limited literacy skills hinder students from constructing meaningful conceptual understanding of Social Studies content, causing learning activities to become largely dependent on rote memorization rather than deep comprehension. Consequently, student engagement during classroom instruction tends to be low, classroom discussions become less interactive, and opportunities to develop critical thinking skills remain limited (Susanto, 2020). Therefore, literacy challenges affect not only students' reading competence but also their learning motivation and academic achievement in Social Studies.

This phenomenon was also observed in eighth-grade Social Studies classes at SMP Negeri 32 Semarang. Preliminary classroom observations revealed that instruction was predominantly delivered through teacher-centered lectures, with textbooks serving as the primary learning resource. Such instructional practices limited meaningful interaction between teachers and students, thereby reducing opportunities for learners to explore learning materials, participate in classroom discussions, and actively construct their own understanding. This condition was reflected in students' relatively low learning motivation, with an average score of only 68.36%, indicating that most students demonstrated limited attention, interest, and engagement during Social Studies lessons. Low learning motivation was accompanied by unsatisfactory academic achievement. The average Mid-Semester Examination (MSE) score of Class VIII G was only 70.00, lower than those of parallel classes, which ranged from 76 to 79. Furthermore, 13 out of 32 students (40.63%) scored below the school's Minimum Learning Achievement Criteria (*Kriteria Ketercapaian Tujuan Pembelajaran* [KKTP]), with scores ranging from 45 to 60. These empirical findings suggest that the existing instructional practices had not yet provided meaningful learning experiences capable of promoting active student engagement and optimal learning achievement in Social Studies.



From a theoretical perspective, learning motivation is widely recognized as one of the primary determinants of successful learning. According to Schunk et al. (2014), motivation influences the intensity, direction, and persistence of students' engagement in learning activities, thereby contributing significantly to academic achievement. Students with higher levels of learning motivation are more likely to participate actively in classroom activities, explore learning materials independently, and persist when encountering academic challenges. Conversely, students with low motivation tend to become passive learners, pay limited attention to teachers' explanations, and focus merely on completing assignments without fully understanding the underlying concepts. Within Keller's ARCS motivational framework—Attention, Relevance, Confidence, and Satisfaction—low learning motivation often results from instructional practices that fail to capture students' attention, relate learning content to authentic experiences, build learners' confidence, or provide satisfying learning experiences (Keller, 2010). Therefore, improving instructional quality requires not only modifications to teaching methods but also the integration of instructional media capable of creating more engaging, contextualized, and meaningful learning experiences.

One instructional medium that possesses these characteristics is the *pop-up book*. Unlike conventional textbooks that present information primarily through written text and two-dimensional illustrations, *pop-up books* provide three-dimensional visual representations that enable students to interact directly with learning materials through folding mechanisms, movable components, and manipulable illustrations (Blumel & Taylor, 2012). These distinctive features position *pop-up books* not merely as instructional media for information delivery but also as interactive learning tools that simultaneously integrate verbal and visual information. According to the Cognitive Theory of Multimedia Learning, learning becomes more effective when students process information through dual cognitive channels—verbal and visual—thereby reducing cognitive load and facilitating deeper conceptual understanding (Mayer, 2021). In Social Studies education, such visual-interactive characteristics are particularly relevant because many topics, including social change, economic activities, geographical conditions, and historical events, require concrete representations to facilitate students' conceptual understanding.

Furthermore, the use of *pop-up books* has considerable potential to strengthen students' literacy competencies. The integration of written text, illustrations, and three-dimensional visual elements enables learners to connect textual information with visual representations, thereby facilitating the processes of comprehension, interpretation, and meaning construction. Consequently, *pop-up books* function not only as instructional media that enhance students' interest in learning but also as pedagogical tools that promote the development of both visual literacy and conceptual literacy. From a constructivist perspective, this type of learning experience enables students to actively construct their own understanding through direct interaction with learning objects rather than passively receiving information from teachers (Piaget, 1977/2020). Therefore, the implementation of *pop-up books* is supported by a strong theoretical foundation for addressing low learning motivation while simultaneously improving students' learning achievement in Social Studies.

The *pop-up book*-based Social Studies instruction implemented in this study is grounded in the integration of John Dewey's philosophy of educational progressivism, Jean Piaget's constructivist learning theory, and Keller's ARCS



motivational model (*Attention, Relevance, Confidence, and Satisfaction*). Dewey argued that meaningful learning emerges through direct experience (*learning by doing*), whereby learners acquire knowledge through active interaction with their learning environment (Dewey, 1938/2018). This perspective is closely aligned with Piaget's constructivist theory, which posits that knowledge is actively constructed through the processes of assimilation and accommodation as learners integrate new experiences into their existing cognitive structures (Piaget, 2020). Within the context of Social Studies education, *pop-up book* media provide rich visual-interactive experiences that enable students to explore social concepts in more concrete and contextualized ways, thereby facilitating knowledge construction. At the same time, Keller's ARCS model suggests that instructional media capable of capturing learners' attention, presenting relevant learning content, fostering confidence, and generating learning satisfaction are more likely to enhance students' learning motivation (Keller, 2010). Accordingly, this study assumes that the visual, interactive, and contextual characteristics of *pop-up book* media not only facilitate conceptual understanding through active learning experiences but also strengthen students' learning motivation, which ultimately contributes to improved learning achievement in Social Studies.

Empirical evidence has consistently demonstrated the positive contribution of *pop-up book* media to the teaching and learning process. Hanifah (2024) reported that a *pop-up book* developed for Social Studies instruction was classified as highly feasible and significantly improved students' learning achievement. Similar findings were reported by Maghsyuroh et al. (2023), who found that the implementation of *pop-up book* media in teaching Indonesian national history enhanced students' conceptual understanding by providing more concrete and interactive visual representations of the learning content. Likewise, Utami et al. (2023) identified a positive relationship between the use of *pop-up book* media and students' learning interest, which subsequently encouraged greater engagement throughout the learning process. Collectively, these findings suggest that visual-interactive instructional media possess substantial potential to enhance the quality of learning by creating more engaging, contextualized, and student-centered learning experiences.

Despite these promising findings, a critical review of previous studies reveals several limitations that warrant further investigation. First, most existing studies have primarily focused on the development of instructional media or have evaluated the effectiveness of *pop-up book* media solely in terms of learning achievement, whereas research examining both learning motivation and learning achievement simultaneously remains limited. Second, the majority of previous studies have been conducted at the elementary school level, leaving insufficient empirical evidence regarding the effectiveness of *pop-up book* media in junior secondary Social Studies education. Third, previous research has generally not integrated constructivist learning theory, Dewey's pragmatist philosophy of education, and Keller's ARCS motivational model into a comprehensive conceptual framework explaining how visual-interactive media enhance both students' motivation and academic achievement. Consequently, both conceptual and empirical gaps remain regarding the effectiveness of *pop-up book* media as a constructivist instructional strategy in junior high school Social Studies classrooms.

Addressing these gaps, the novelty of the present study lies in examining the effectiveness of *pop-up book*-based Social Studies instruction through a pre-experimental one-group pretest-posttest design, while simultaneously investigating



learning motivation and learning achievement as two complementary indicators of instructional effectiveness. Unlike previous studies that primarily emphasized instructional media development or focused on a single learning outcome, this study conceptualizes the *pop-up book* as a constructivist visual learning medium that not only facilitates students' conceptual understanding but also enhances learning motivation by providing active, contextualized, and meaningful learning experiences. Accordingly, this study is expected to contribute theoretically to the advancement of visual-interactive approaches in Social Studies education while also extending the empirical evidence regarding the implementation of constructivist pedagogy at the junior high school level.

Based on the preceding discussion, this study addresses two research questions: (1) *Is the use of pop-up book media effective in improving students' learning motivation in Social Studies?* and (2) *Is the use of pop-up book media effective in enhancing the Social Studies learning achievement of eighth-grade junior high school students?* In line with these questions, the objective of this study is to examine the effectiveness of *pop-up book*-based Social Studies instruction in improving students' learning motivation and learning achievement. Drawing upon Dewey's philosophy of educational progressivism, Piaget's constructivist learning theory, and Keller's ARCS motivational model, this study hypothesizes that the implementation of *pop-up book* media will significantly improve students' learning motivation and Social Studies achievement by providing learning experiences that are more concrete, interactive, and meaningful than those experienced prior to the instructional intervention.

RESEARCH METHOD

This study employed a quantitative approach using a *pre-experimental design*. The research design applied was a *one-group pretest-posttest design*, which involves a single group of participants receiving a treatment and being measured before (*pretest*) and after (*posttest*) the treatment to determine changes resulting from the intervention (Sugiyono, 2013). This design was selected because the study was conducted in a natural classroom setting, making it impractical for the researcher to randomly assign participants or establish a fully controlled comparison group. Furthermore, this design was considered appropriate for evaluating the effectiveness of *pop-up book* media in Social Studies learning on students' motivation and learning achievement empirically.

Conceptually, the *one-group pretest-posttest design* enables researchers to identify changes in students' abilities by comparing scores before and after the intervention within the same group. Thus, the effectiveness of *pop-up book* media could be analyzed based on improvements in students' learning motivation and Social Studies learning achievement following the implementation of visual-interactive learning media.

Table 1. One-Group Pretest–Posttest Research Design

Pretest	Treatment	Posttest
O ₁	X	O ₂



Description:

O_1 = initial measurement of students' motivation and learning achievement before treatment

X = Social Studies instruction using *pop-up book* media

O_2 = final measurement of students' motivation and learning achievement after treatment

The study was conducted at SMP Negeri 32 Semarang during the second semester of the 2024/2025 academic year. The research participants consisted of 32 students from class VIII G. The class was selected using a *purposive sampling* technique based on the consideration that class VIII G had relatively lower average Social Studies achievement compared to other parallel classes and demonstrated low learning motivation according to preliminary observations. This sampling technique was employed to ensure that the treatment could be implemented more effectively in accordance with the research objectives (Hardani et al., 2020).

The study consisted of independent and dependent variables. The independent variable was the use of *pop-up book* media in Social Studies learning, while the dependent variables were students' learning motivation and learning achievement.

Table 2. Operationalization of Research Variables

Variable	Type of Variable	Indicators	Theoretical Basis
Pop-up book media	Independent variable (X)	3D visualization, interactivity, learning engagement	Bluemel & Taylor (2012)
Learning motivation	Dependent variable (Y_1)	Attention, relevance, confidence, satisfaction	Keller (2010)
Social Studies learning achievement	Dependent variable (Y_2)	Conceptual understanding, social analysis, cognitive achievement	Revised Bloom's Taxonomy

Operationally, learning motivation was defined as students' internal and external drives influencing their active engagement in the Social Studies learning process. Learning motivation was measured using a five-point Likert-scale questionnaire developed based on Keller's ARCS (*Attention, Relevance, Confidence, Satisfaction*) motivational framework (Keller, 2010). Meanwhile, Social Studies learning achievement was defined as students' cognitive performance after participating in the learning process and was measured using multiple-choice written tests covering cognitive levels C1–C4.

Data collection techniques included observation, questionnaires, documentation, and written tests. Observation was conducted to examine the implementation of Social Studies instruction using *pop-up book* media. Questionnaires were used to measure students' learning motivation before and after the intervention. Documentation was utilized to obtain supporting data, including Mid-Semester Examination scores, attendance lists, and classroom activity records. In addition, written tests were administered to measure improvements in students' Social Studies learning achievement through *pretest* and *posttest* scores.

Table 3. Blueprint of the Learning Motivation Instrument

Indicator	Description	Number of Items
Attention	Students' attention toward Social Studies learning	5
Relevance	Relevance of learning materials to students' needs	5
Confidence	Students' self-confidence during learning activities	5
Satisfaction	Students' satisfaction with the learning process	5



The learning motivation questionnaire consisted of 20 statements measured using a five-point Likert scale ranging from strongly agree to strongly disagree.

Before implementation, the research instruments, including the learning motivation questionnaire and achievement tests, were tested for validity and reliability. Validity testing involved *expert judgment* and empirical validity testing using Pearson's *Product Moment Correlation*. Reliability testing was conducted using Cronbach's Alpha with the assistance of IBM SPSS Statistics version 26. Instruments were considered reliable if the Cronbach's Alpha coefficient exceeded 0.70 (Ghozali, 2021). These procedures were carried out to ensure that the instruments measured the variables accurately, consistently, and scientifically.

The research was conducted through several stages: (1) preliminary study and identification of Social Studies learning problems, (2) development of instructional materials and research instruments, (3) validity and reliability testing of the instruments, (4) administration of the *pretest*, (5) implementation of Social Studies instruction using *pop-up book* media, (6) administration of the *posttest* and final learning motivation assessment, (7) statistical data analysis, and (8) formulation of research conclusions.

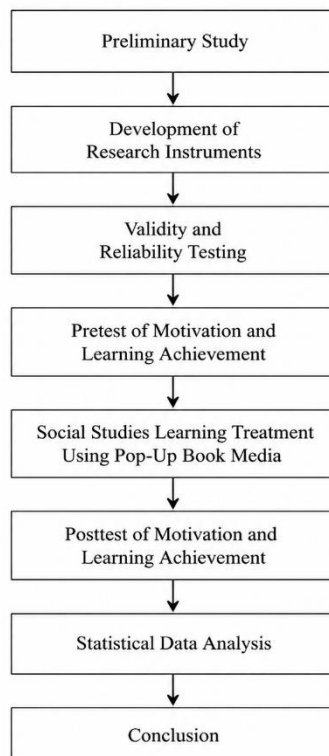


Figure 1. Research Procedure Flowchart

Data analysis techniques involved descriptive and inferential statistical analyses. Descriptive statistics were used to describe mean scores, percentages, minimum scores, maximum scores, and standard deviations of students' motivation and learning achievement before and after treatment. Meanwhile, inferential statistics were employed to test the research hypotheses through several statistical procedures.

The initial stage of analysis involved prerequisite testing using the Kolmogorov–Smirnov normality test to determine data distribution. After meeting the normality assumption, hypothesis testing was conducted using the *paired sample*

t-test to determine significant differences between *pretest* and *posttest* scores of students' motivation and learning achievement after the implementation of *pop-up book* media. The *paired sample t-test* was considered appropriate because the study involved a single group measured under two different conditions: before and after treatment (Santoso, 2020).

In addition to statistical significance testing, this study also employed *Normalized Gain (N-Gain)* analysis to determine the effectiveness level of students' learning achievement improvement after treatment. The interpretation of *N-Gain* values followed the categories of high ($g > 0.70$), moderate ($0.30 \leq g \leq 0.70$), and low ($g < 0.30$). To strengthen the interpretation of treatment effectiveness, Cohen's *d effect size* analysis was also applied to determine the magnitude of the effect of *pop-up book* media on students' motivation and learning achievement. Effect size interpretation followed the categories of small ($d = 0.20$), medium ($d = 0.50$), and large ($d \geq 0.80$). All statistical analyses were conducted using IBM SPSS Statistics version 26 with a significance level of 0.05.

From an ethical perspective, this study was conducted after obtaining official permission from SMP Negeri 32 Semarang. All students participated voluntarily, and the research data were used solely for academic purposes without disclosing participants' personal identities. Therefore, the study adhered to the principles of confidentiality, informed consent, and academic integrity in educational research.

Based on the theoretical framework and research design employed, the research hypotheses were formulated as follows:

H₁: The use of *pop-up book* media is effective in improving the learning motivation and Social Studies learning achievement of eighth-grade students at SMP Negeri 32 Semarang.

H₀: The use of *pop-up book* media is not effective in improving the learning motivation and Social Studies learning achievement of eighth-grade students at SMP Negeri 32 Semarang.

RESULTS AND DISCUSSION

Results

This study was conducted at SMP Negeri 32 Semarang during the second semester of the 2024/2025 academic year. The research participants consisted of 32 students from class VIII G. The class was selected based on preliminary observations indicating that students' motivation and learning outcomes in Social Studies (IPS) were relatively low compared to other parallel classes. IPS learning activities in the class were still predominantly conducted through conventional lecture-based methods and textbook-oriented instruction, resulting in limited student engagement during the learning process.

The implementation of *pop-up book* media was applied to IPS materials related to social dynamics and Indonesian national history. The *pop-up book* functioned as a visual-interactive learning medium designed to assist students in understanding IPS concepts more concretely through three-dimensional illustrations, visual representations, and exploratory learning activities.



Descriptive Analysis of Learning Motivation and Learning Outcomes

Pretest and Posttest Results

Descriptive analysis was conducted to identify changes in students' learning motivation and learning outcomes before and after the implementation of *pop-up book*-based learning in Social Studies. The results indicated significant improvements in both variables following the treatment.

Table 4. Descriptive Results of Pretest and Posttest Scores

Variable	Pretest	Posttest	Difference
Learning Motivation	68.36	84.25	+15.89
IPS Learning Outcomes	70.00	83.75	+13.75

As presented in Table 1, students' average learning motivation score increased from 68.36 to 84.25 after the implementation of *pop-up book* media. The increase of 15.89 points indicates that visual-interactive learning media successfully enhanced students' attention, engagement, and enthusiasm during the learning process.

Similarly, students' IPS learning outcomes also improved significantly. The average score increased from 70.00 in the pretest to 83.75 in the posttest, reflecting an improvement of 13.75 points. These findings indicate that the use of *pop-up book* media effectively supported students' understanding of IPS concepts.

Distribution of Learning Mastery

The analysis of learning mastery was conducted based on the Minimum Mastery Criteria (*Kriteria Ketercapaian Tujuan Pembelajaran/KKTP*) set at 75.

Table 5. Distribution of Students' Learning Mastery

Category	Pretest	Posttest
Mastery (≥ 75)	19 students (59.4%)	29 students (90.6%)
Non-Mastery (< 75)	13 students (40.6%)	3 students (9.4%)

Based on Table 2, the number of students achieving learning mastery increased substantially after the implementation of *pop-up book* media. During the pretest, only 19 students (59.4%) achieved mastery learning, whereas after the treatment, the number increased to 29 students (90.6%). Meanwhile, the number of students who did not achieve mastery decreased from 13 students to only 3 students.

These findings demonstrate that *pop-up book* media contributed positively to students' understanding of IPS concepts and improved learning achievement more evenly across students.

Validity and Reliability Testing

Before being implemented in the study, the learning motivation questionnaire and IPS learning achievement test were tested for validity and reliability. The validity test results indicated that all instrument items had correlation coefficients higher than the *r*-table value and were therefore considered valid. Reliability testing using Cronbach's Alpha showed a coefficient value of 0.873 for the motivation questionnaire and 0.812 for the learning outcomes test.

Table 6. Reliability Test Results

Instrument	Cronbach's Alpha	Category
Learning Motivation Questionnaire	0.873	Highly Reliable
Learning Outcomes Test	0.812	Reliable



Based on these results, the research instruments were considered appropriate for data collection due to their strong consistency and reliability.

Prerequisite Analysis

Normality Test

The normality test was conducted using the Kolmogorov–Smirnov test to determine whether the research data were normally distributed.

Table 7. Results of the Normality Test

Variable	Sig.	Interpretation
Pretest Learning Outcomes	0.200	Normal
Posttest Learning Outcomes	0.176	Normal
Learning Motivation	0.189	Normal

As shown in Table 4, all variables had significance values greater than 0.05, indicating that the data were normally distributed and met the assumptions required for hypothesis testing using the *paired sample t-test*.

Hypothesis Testing

Paired Sample t-test

Hypothesis testing was conducted to determine whether there were significant differences between the pretest and posttest scores after the implementation of *pop-up book* media.

Table 8. Results of the Paired Sample t-test

Variable	t-value	Sig. (2-tailed)	Interpretation
Learning Motivation	8.742	0.000	Significant
IPS Learning Outcomes	9.615	0.000	Significant

Based on Table 5, the significance values for all variables were $0.000 < 0.05$. Therefore, H_0 was rejected and H_1 was accepted. This indicates that there were significant improvements in students' learning motivation and IPS learning outcomes after the implementation of *pop-up book*-based learning.

N-Gain Analysis

The N-Gain analysis was conducted to determine the effectiveness level of students' learning improvement after the treatment.

Table 9. Results of the N-Gain Analysis

Variable	N-Gain	Category
IPS Learning Outcomes	0.68	Moderate
Learning Motivation	0.72	High

Based on the N-Gain analysis, the improvement in IPS learning outcomes was categorized as moderate with an N-Gain score of 0.68, while the improvement in learning motivation was categorized as high with an N-Gain score of 0.72. These findings indicate that the implementation of *pop-up book* media was effective in enhancing students' learning motivation and academic achievement.

Effect Size Analysis

In addition to statistical significance testing, this study also employed Cohen's d effect size analysis to determine the magnitude of the treatment effect.



Table 10. Results of the Effect Size Analysis

Variable	Cohen's d	Interpretation
Learning Motivation	1.12	Large Effect
IPS Learning Outcomes	1.25	Large Effect

The effect size analysis revealed that the implementation of *pop-up book* media had a substantial impact on improving students' learning motivation and IPS learning outcomes. Cohen's d values greater than 0.80 indicate that the treatment produced a strong practical effect on Social Studies learning among eighth-grade students.

Discussion

The findings of this study demonstrate that the implementation of *pop-up book*-based learning in Social Studies (IPS) significantly improved students' learning motivation and academic achievement. The increase in students' motivation scores from 68.36 in the pretest to 84.25 in the posttest indicates that the use of interactive visual media successfully created a more engaging and meaningful learning environment. Likewise, the improvement in students' learning outcomes from an average score of 70.00 to 83.75 confirms that the use of *pop-up book* media contributed positively to students' cognitive understanding of IPS materials. The statistical analysis using *paired sample t-test* further strengthened these findings, showing significance values below 0.05, while the Cohen's d effect size analysis revealed a large effect category. These results indicate that the treatment not only produced statistically significant differences but also had substantial practical implications for classroom learning.

From a theoretical perspective, the findings support the constructivist learning theory proposed by Jean Piaget, which emphasizes that knowledge is actively constructed by learners through interaction with learning experiences. The *pop-up book* media enabled students to engage directly with visual and manipulative representations of IPS concepts, allowing them to construct understanding through observation, exploration, and interaction. This process transformed learning from passive reception into active meaning-making activities. In IPS learning, where many concepts are abstract, chronological, and contextual, visual-interactive media become particularly important in helping students bridge concrete experiences with abstract social concepts.

The results also align with the pragmatic educational philosophy of John Dewey, particularly the principle of *learning by doing*. Dewey argued that effective learning occurs when students actively participate in meaningful experiences connected to real-life contexts. In this study, the *pop-up book* functioned not merely as a visual aid but as an experiential learning medium that encouraged students to interact physically and cognitively with learning materials. The three-dimensional and interactive characteristics of the media increased students' curiosity, attention, and classroom participation, which subsequently strengthened their learning engagement and comprehension.

Furthermore, the findings are consistent with Keller's ARCS motivational theory, which highlights four important dimensions of learning motivation: *attention*, *relevance*, *confidence*, and *satisfaction* (Keller, 2010). The visual appeal and interactivity of the *pop-up book* succeeded in attracting students' attention and increasing their curiosity toward IPS learning materials. The contextual presentation of historical and social content also enhanced students' perception of relevance,



while the hands-on interaction with the media improved their confidence in understanding the material. The successful completion of learning tasks eventually generated learning satisfaction, which contributed to stronger learning motivation overall.

The significant increase in students' learning outcomes can also be explained through Mayer's Cognitive Theory of Multimedia Learning, which argues that learning becomes more effective when verbal and visual information are presented simultaneously (Mayer, 2021). The *pop-up book* integrated text, images, colors, and three-dimensional structures into a unified learning experience, thereby helping students process and organize information more effectively in working memory. As a result, students were able to understand IPS concepts more comprehensively compared to conventional text-based learning approaches.

Empirically, the findings reinforce previous studies indicating the effectiveness of *pop-up book* media in educational settings. Hanifah (2024) found that *pop-up book* media significantly improved students' IPS achievement through visually engaging learning activities. Similarly, Maghsyuroh et al. (2023) reported that *pop-up book* implementation enhanced students' understanding of Indonesian historical materials. Utami et al. (2023) also identified a positive relationship between *pop-up book* media and students' learning interest. However, this study extends previous research by simultaneously examining learning motivation and learning outcomes within IPS learning at the junior high school level using a *pre-experimental one-group pretest-posttest design*. Thus, the present study contributes to the growing literature on interactive multimedia learning in social studies education.

In a broader educational context, the findings imply that innovative and student-centered learning media are urgently needed to address the ongoing literacy and engagement crisis in Indonesian education. The low literacy performance reported by PISA and UNESCO reflects the necessity of transforming conventional teacher-centered instruction into more interactive and experiential learning approaches. The implementation of *pop-up book* media represents one practical pedagogical strategy for fostering active learning, visual literacy, and student engagement in IPS classrooms.

Nevertheless, this study has several limitations. First, the research employed a *one-group pretest-posttest design* without a control group, which limits the ability to generalize causal conclusions comprehensively. Second, the study involved only one class with a relatively small sample size, which may reduce external validity. Third, the duration of treatment implementation was relatively short, so the long-term impact of *pop-up book*-based learning could not yet be fully observed.

Therefore, future studies are recommended to employ more rigorous experimental designs involving control groups and larger sample sizes across different educational contexts. Further research may also explore the integration of digital or augmented reality-based *pop-up book* media to strengthen interactive learning experiences in IPS education. Additionally, future studies could investigate the influence of *pop-up book* media on other educational variables such as critical thinking skills, collaborative learning, digital literacy, or historical empathy among students.



CONCLUSION

This study demonstrates that constructivist visual learning through *pop-up book* media effectively enhanced both students' learning motivation and learning achievement in Social Studies at the junior high school level. The implementation of *pop-up book*-based instruction significantly improved students' motivation scores from 68.36 to 84.25 and increased their average learning achievement from 70.00 to 83.75. The paired-sample *t*-test confirmed that these improvements were statistically significant ($p < 0.05$), while the *N*-Gain and effect size analyses indicated moderate-to-high learning improvement with a strong practical impact. These findings confirm that *pop-up book* media can serve as an effective visual learning strategy for creating more engaging, meaningful, and student-centered Social Studies instruction.

This study contributes to the growing body of research on constructivist learning by simultaneously examining learning motivation and learning achievement within a pre-experimental one-group pretest-posttest design in junior high school Social Studies. Practically, the findings suggest that *pop-up book* media can be adopted as an instructional innovation to improve classroom engagement and conceptual understanding. However, the absence of a control group and the relatively small sample size limit the generalizability of the findings. Future studies are therefore encouraged to employ more rigorous experimental designs with larger samples and to explore the integration of digital or technology-enhanced *pop-up book* media in fostering broader learning competencies.

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