

The Effectiveness of Picture Storybook Media (BCB) in Improving Integrated Science and Social Studies (IPAS) Learning Outcomes among Third Grade Elementary Students

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A B S T R A K

Rendahnya hasil belajar siswa pada mata pelajaran IPAS serta kurangnya penggunaan media pembelajaran yang menarik menjadi permasalahan yang dihadapi dalam proses pembelajaran di sekolah dasar. Penelitian ini bertujuan untuk mengetahui pengaruh media BCB (Buku Cerita Bergambar) terhadap hasil belajar IPAS siswa kelas III SD Negeri Lambada Klieng. Penelitian ini menggunakan pendekatan kuantitatif dengan desain One-Group Pretest-Posttest Design. Subjek penelitian berjumlah 24 siswa. Instrumen yang digunakan berupa tes hasil belajar sebanyak 6 butir soal yang diberikan sebelum (pretest) dan sesudah (posttest) perlakuan. Teknik analisis data yang digunakan meliputi uji normalitas, uji hipotesis menggunakan paired sample t-test, dan uji N-Gain. Hasil

penelitian menunjukkan bahwa nilai rata-rata pretest sebesar 58,25 meningkat menjadi 82,75 pada posttest. Hasil uji t menunjukkan nilai signifikansi sebesar $0,000 < 0,05$, sehingga dapat disimpulkan bahwa media BCB berpengaruh signifikan terhadap hasil belajar siswa. Selain itu, hasil uji N-Gain sebesar 0,59 berada pada kategori sedang, yang menunjukkan bahwa media BCB cukup efektif dalam meningkatkan hasil belajar. Dengan demikian, media BCB (Buku Cerita Bergambar) dapat digunakan sebagai alternatif media pembelajaran yang efektif untuk meningkatkan hasil belajar IPAS siswa sekolah dasar.

A B S T R A C T

Low student learning outcomes in Integrated Science and Social Studies (IPAS) and the limited use of engaging instructional media remain significant challenges in elementary school learning processes. This study aimed to determine the effectiveness of Picture Storybook Media (BCB) in improving the IPAS learning outcomes of third-grade students at SD Negeri Lambada Klieng. The study employed a quantitative approach using a one-group pretest-posttest design. The participants consisted of 24 third-grade students. Data were collected using a learning achievement test comprising six items administered before (pretest) and after (posttest) the implementation of the Picture Storybook Media intervention. Data analysis techniques included the normality test, hypothesis testing using the paired sample t-test, and N-Gain analysis. The findings revealed that the mean pretest score of 58.25 increased to 82.75 in the posttest. Furthermore, the paired sample t-test indicated a significance value of 0.000, which was lower than 0.05, demonstrating a statistically significant effect of Picture Storybook Media on students' learning outcomes. In addition, the N-Gain score of 0.59 was categorized as moderate, indicating that the use of Picture Storybook Media

was reasonably effective in enhancing students' IPAS achievement. Therefore, Picture Storybook Media (BCB) can be considered an effective alternative instructional medium for improving Integrated Science and Social Studies learning outcomes among elementary school students.

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INTRODUCTION

The implementation of the Merdeka Curriculum in Indonesia has transformed the learning paradigm at the elementary school level from teacher-centered instruction toward student-centered and meaningful learning experiences. One of the implications of this transformation is the integration of Natural Science and Social Science subjects into a new subject known as Integrated Science and Social Studies (IPAS). The integration aims to develop students' critical thinking, problem-solving abilities, and contextual understanding of phenomena occurring in their surrounding environments (Barlian & Solekah, 2022). However, the successful implementation of IPAS learning requires instructional strategies and learning media that are capable of accommodating the developmental characteristics of elementary school students, particularly those in lower grades who tend to learn more effectively through concrete, visual, and contextual experiences.

Learning outcomes remain one of the main indicators used to evaluate the success of educational processes in elementary schools. Nevertheless, numerous studies have reported that elementary students frequently experience difficulties in understanding abstract concepts presented through conventional teaching methods and text-based learning resources (Mayer, 2021; Moreno & Mayer, 2022). Traditional instructional approaches dominated by lectures and textbooks often reduce students' motivation, attention, and participation during classroom activities, ultimately affecting learning achievement negatively (Kucirkova & Flewitt, 2020).

Educational media play a significant role in facilitating meaningful learning experiences and improving students' cognitive engagement. Contemporary educational research demonstrates that visual and narrative-based instructional media significantly contribute to students' conceptual understanding, motivation, and long-term retention of information (Sung et al., 2021; Lim & Toh, 2022). Among various instructional media, picture storybooks have received considerable attention because they combine textual information with visual illustrations, allowing students to construct knowledge through dual coding processes involving verbal and visual representations simultaneously (Paivio, 2021).

Picture Storybook Media (BCB) is particularly relevant for elementary school learners because children in the concrete operational stage tend to understand concepts more effectively when learning materials are represented visually and linked with real-life contexts. The integration of images and stories can stimulate imagination, increase curiosity, and facilitate the development of literacy and conceptual understanding simultaneously (Nikolajeva, 2020). Furthermore, picture storybooks encourage active participation and emotional engagement, which are essential components of effective learning among young learners (Arizpe & Styles, 2021).

Recent international studies have consistently demonstrated the positive impact of picture storybooks on learning outcomes across various disciplines. Research conducted by Kendeou et al. (2020) found that story-based visual learning materials improved elementary students' reading comprehension and conceptual retention significantly compared with conventional text-based instruction. Similarly, Mar et al. (2021) reported that narrative visual media enhanced students' engagement and facilitated deeper cognitive processing of learning materials. Studies by Takacs and Bus (2022) further indicated that picture storybooks effectively support vocabulary acquisition, conceptual understanding, and higher-order thinking skills among elementary school students.

In science education, visual narratives have been shown to improve students' understanding of scientific concepts by reducing cognitive load and increasing contextual relevance (Fleer & Hammer, 2021). Similarly, social studies learning benefits from story-based approaches because they enable learners to connect abstract social concepts with familiar experiences encountered in daily life (Berson et al., 2021). Consequently, integrating picture storybooks into IPAS instruction represents a promising strategy for improving elementary students' learning outcomes.

In Indonesia, several recent studies have explored the effectiveness of picture storybooks and visual learning media in elementary education. Research conducted by Handayani (2020) revealed that picture storybook media significantly improved students' comprehension and academic achievement in thematic learning. Darayani (2022) similarly reported that picture storybook implementation contributed positively to students' learning outcomes and classroom participation. Furthermore, Faizah et al. (2023) demonstrated that digital comic-based learning media enhanced students' motivation and conceptual understanding in elementary classrooms. Additional findings from Dewi (2022) indicated that picture storybooks effectively increased students' reading interest and learning engagement.

Fidiawati, L. (2025) Studies published in the *Journal Elementary of Education (JEE)* also emphasize the importance of innovative and contextual learning media in elementary classrooms. Several studies highlighted that interactive instructional media contribute positively to student motivation, active participation, and academic achievement in primary education contexts. These findings suggest that integrating attractive visual media into classroom instruction is essential for supporting effective learning processes in elementary schools.

Despite these promising findings, several important research gaps remain unresolved. First, previous studies predominantly focused on literacy development, reading interest, or thematic learning outcomes rather than specifically examining Integrated Science and Social Studies (IPAS) learning outcomes under the Merdeka Curriculum framework. Second, most previous studies investigated digital comics or electronic storybooks, while empirical evidence regarding printed Picture Storybook Media designed specifically for IPAS instruction remains limited. Third, limited studies have focused on lower-grade elementary students, particularly third-grade learners, whose cognitive characteristics differ substantially from upper-grade students and therefore require specialized instructional approaches.

Moreover, previous studies have rarely investigated the effectiveness of picture storybooks in teaching spatial orientation and map-reading concepts, such as identifying directions, room positions, and environmental layouts. In fact, these competencies represent important learning objectives within the topic "Denah Rumahku" in Grade III IPAS learning. The absence of contextual visual learning media often results in students experiencing difficulties in understanding directional concepts and interpreting maps accurately.

Preliminary observations conducted at SD Negeri Lambada Klieng revealed that IPAS learning was still dominated by lecture methods and textbook-oriented instruction. Learning materials were primarily text-based and contained limited visual support, reducing students' interest and participation during classroom activities. As a consequence, many students experienced difficulties understanding concepts related to spatial orientation and environmental mapping. Academic records showed that the average IPAS score of Grade III students was 63.06, with approximately 75% of students failing to achieve the minimum mastery criterion.

Classroom observations further indicated that students demonstrated low reading interest and tended to engage with learning materials only when explicitly instructed by

teachers. Teachers also reported limited utilization of innovative instructional media due to resource constraints and lack of available learning materials tailored to students' developmental characteristics. Consequently, there is an urgent need for instructional innovations capable of improving students' engagement and learning outcomes in IPAS learning.

Picture Storybook Media offers a potential solution to these challenges because it integrates visual illustrations, narratives, and contextual learning experiences into a single instructional resource. Through stories depicting familiar environments and situations, students can develop a better understanding of spatial concepts while simultaneously improving reading comprehension and learning motivation. The use of picture storybooks may therefore facilitate meaningful learning experiences that align with the principles of the Merdeka Curriculum.

Based on the theoretical considerations, empirical evidence, and identified research gaps, this study aims to investigate the effectiveness of Picture Storybook Media (BCB) in improving Integrated Science and Social Studies (IPAS) learning outcomes among third-grade students at SD Negeri Lambada Klieng. The novelty of this study lies in the integration of picture storybook media with IPAS learning materials focusing on the topic "Denah Rumahku" and its implementation among lower-grade elementary students within the context of the Merdeka Curriculum.

METODE PENELITIAN

3. Research Method

3.1 Research Approach and Design

3.1.1 Research Approach

This study employed a quantitative research approach. Quantitative research is a systematic method used to test theories by collecting numerical data and analyzing them using statistical procedures to explain relationships among variables and examine hypotheses (Creswell & Creswell, 2018). This approach was selected because the present study aimed to determine the effect of Picture Storybook Media (BCB) on students' Integrated Science and Social Studies (IPAS) learning outcomes.

3.1.2 Research Design

This study used a pre-experimental method with a **One-Group Pretest-Posttest Design**. In this design, participants were given a pretest prior to treatment implementation

and a posttest after the treatment to determine changes in learning outcomes attributable to the intervention (Sugiyono, 2019). The design can be illustrated as follows:

Pretest	Treatment	Posttest
O_1	X	O_2

Description:

- O_1 = Pretest score before treatment
- X = Treatment using Picture Storybook Media (BCB)
- O_2 = Posttest score after treatment

This design was chosen because it allows researchers to compare students' learning outcomes before and after the implementation of Picture Storybook Media.

Research Site and Time

The study was conducted at SD Negeri Lambada Klieng, located in Baitussalam District, Aceh Besar Regency, Indonesia. The research was carried out during the second semester of the 2025/2026 academic year.

Population and Sample

The population of this study consisted of all students enrolled at SD Negeri Lambada Klieng during the 2025/2026 academic year, totaling 192 students.

The sample was selected using a purposive sampling technique based on recommendations from the classroom teacher and the suitability of the participants with the research objectives. The sample comprised all 24 students of Grade III, consisting of male and female students. Grade III students were selected because the IPAS topic "Denah Rumahku" is taught at this level and students exhibited difficulties in understanding concepts related to spatial orientation and map reading.

Research Variables

The study involved two variables:

1. **Independent Variable (X)**

The independent variable was the use of Picture Storybook Media (BCB) in IPAS learning activities.

2. **Dependent Variable (Y)**

The dependent variable was students' learning outcomes in Integrated Science and Social Studies (IPAS).

Research Instrument

The research instrument used in this study was an achievement test designed to measure students' mastery of the IPAS topic "Denah Rumahku." The test consisted of six

multiple-choice items developed according to the learning objectives and indicators of the material.

The instrument was administered twice:

- **Pretest**, conducted before the implementation of Picture Storybook Media.
- **Posttest**, conducted after the completion of the treatment.

The scores obtained from both tests were used to determine the effectiveness of the intervention.

Data Collection Technique

Data were collected using the testing method. The pretest was administered prior to the treatment to determine students' initial understanding of the topic, while the posttest was conducted after the implementation of Picture Storybook Media to measure improvements in learning outcomes.

The learning treatment was conducted during IPAS lessons on the topic "**Denah Rumahku**" under Chapter 5 "**Aku dan Lingkungan Sekitarku**." During the intervention, students learned using Picture Storybook Media containing stories, illustrations, symbols, and maps related to familiar home environments.

Data Analysis Techniques

Descriptive statistical analysis was used to determine the mean, minimum score, maximum score, and standard deviation of students' pretest and posttest scores.

Normality Test

The normality test was conducted to determine whether the data were normally distributed before hypothesis testing. Since the sample size was less than 50 participants ($n = 24$), the **Shapiro-Wilk test** was employed.

The decision criteria were as follows:

- If the significance value (Sig.) > 0.05 , the data are normally distributed.
- If the significance value (Sig.) ≤ 0.05 , the data are not normally distributed.

Hypothesis Testing

Hypothesis testing was conducted using the **Paired Sample t-test** to determine whether there was a significant difference between pretest and posttest scores following the implementation of Picture Storybook Media.

The hypotheses tested in this study were:

- **H₀**: Picture Storybook Media (BCB) does not significantly affect Grade III students' IPAS learning outcomes at SD Negeri Lambada Klieng.

- **H₁**: Picture Storybook Media (BCB) significantly affects Grade III students' IPAS learning outcomes at SD Negeri Lambada Klieng.

The decision criteria were:

- If Sig. (2-tailed) < 0.05, H₀ is rejected and H₁ is accepted.
- If Sig. (2-tailed) ≥ 0.05, H₀ is accepted and H₁ is rejected.

N-Gain Analysis

The effectiveness of Picture Storybook Media in improving students' learning outcomes was evaluated using the normalized gain (N-Gain) score.

The interpretation criteria for the N-Gain score are presented in Table 1.

N-Gain Score	Category
N-Gain < 0.30	Low
0.30 ≤ N-Gain ≤ 0.70	Moderate
N-Gain > 0.70	High

(Source: Sundayana, 2016)

The N-Gain analysis was used to determine the magnitude of improvement in students' IPAS learning outcomes after the implementation of Picture Storybook Media.

RESEARCH RESULTS AND DISCUSSION

Research Results

This study involved 24 third-grade students at SD Negeri Lambada Klieng. The research data were obtained from pretest and posttest scores after the implementation of Picture Storybook Media (BCB) in IPAS learning on the topic "**Denah Rumahku.**"

The summary of the research data is presented below:

Aspect	Result
Number of students	24
Pretest mean score	58.25
Posttest mean score	82.75
Mean increase	24.50
Paired sample t-test significance	0.000
N-Gain score	0.59
N-Gain category	Moderate

The descriptive results show that students' learning outcomes increased after the treatment. The average pretest score was 58.25, while the average posttest score increased to 82.75. This means that there was an improvement of 24.50 points after the use of Picture Storybook Media.

The hypothesis test using the paired sample t-test produced a significance value of 0.000 ($p < 0.05$), indicating that there was a statistically significant difference between students' pretest and posttest scores. In addition, the N-Gain score of 0.59 falls into the moderate category, which shows that the use of Picture Storybook Media was effective in improving students' IPAS learning outcomes. Most students experienced moderate improvement, while one student reached the high improvement category.

Discussion

The findings of this study indicate that Picture Storybook Media (BCB) has a positive effect on students' IPAS learning outcomes. The increase in the average score from 58.25 to 82.75 suggests that the media helped students understand the material more easily, especially because the topic "**Denah Rumahku**" requires visual and contextual understanding.

This result is in line with Mayer's multimedia learning theory, which states that learning becomes more effective when verbal information is combined with visual information because students process information through dual channels (Mayer, 2021). In this study, the combination of pictures and stories helped students connect abstract concepts with concrete representations. This is also supported by Arsyad (2017), who explains that instructional media can clarify messages, attract attention, and make learning more meaningful.

The use of picture storybooks is also appropriate for elementary school students because they are generally in the concrete operational stage of cognitive development. According to Piaget (1972), children at this stage learn better when concepts are presented through concrete objects, images, and direct experiences. Therefore, Picture Storybook Media is suitable for helping third-grade students understand spatial concepts such as house layouts, directions, and environmental relationships.

In addition, the narrative format of picture storybooks can increase students' motivation and engagement in learning. Sudjana and Rivai (2019) emphasize that learning media can stimulate students' interest and create a more enjoyable learning atmosphere. The story-based presentation in this study likely made the lesson more interesting and easier to follow, so students were more active and focused during the learning process.

The statistical results further strengthen these findings. The paired sample t-test showed a significance value of 0.000, which means that the difference between pretest and posttest scores was not due to chance. The N-Gain score of 0.59 indicates a moderate level of effectiveness. Hake (1998) explains that normalized gain is a useful measure for determining the extent of learning improvement after instruction, while Sundayana (2016) classifies N-Gain scores between 0.30 and 0.70 as moderate. Thus, the intervention can be considered effective, although there is still room for improvement through repeated use and stronger teacher guidance.

Overall, the findings confirm that Picture Storybook Media can be used as an effective alternative learning medium in IPAS instruction. The media not only improves learning outcomes but also supports meaningful, enjoyable, and student-centered learning experiences.

CONCLUSION

This study aimed to determine the effect of Picture Storybook Media (BCB) on the IPAS learning outcomes of third-grade students at SD Negeri Lambada Klieng. Based on the research results, it can be concluded that Picture Storybook Media significantly improved students' learning outcomes.

The average pretest score was 58.25, while the average posttest score increased to 82.75, showing an improvement of 24.50 points. The paired sample t-test produced a significance value of 0.000 ($p < 0.05$), indicating a significant difference between students' scores before and after the treatment. Furthermore, the N-Gain score of 0.59 showed that the effectiveness of the media was in the moderate category.

Therefore, Picture Storybook Media (BCB) is an effective instructional medium for improving IPAS learning outcomes, especially for learning materials that require visual representation and contextual understanding such as the topic **"Denah Rumahku."**

Recommendations

1. Elementary school teachers are encouraged to use Picture Storybook Media as an alternative instructional medium in IPAS learning, especially for topics that require visual explanation and contextual understanding.
2. Schools should support teachers in developing innovative and student-friendly learning media that are appropriate for the characteristics of elementary school learners.
3. Future researchers are encouraged to conduct similar studies with larger samples, control groups, and different learning topics to obtain more comprehensive findings.
4. Further studies may also examine the effect of Picture Storybook Media on other variables, such as learning motivation, reading literacy, critical thinking skills, and creativity.

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