



Journal of Elementary Education (JELEDUC)

Volume 3 (1) 1 – 9, June 2026

E-ISSN: 3063-5330 (Online)

DOI: 10.38040/jeleduc.v3i1.1458

The article is published with Open Access at: <https://jurnal.umla.ac.id/index.php/JELEDUC/index>

ANALYSIS OF THE USE OF AUGMENTED REALITY-BASED POP-UP BOOK MEDIA AS A STORYTELLING MEDIA IN INDONESIAN LANGUAGE LEARNING IN GRADE IV ELEMENTARY SCHOOL

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ABSTRACT

The rapid development of digital technology provides opportunities to utilize more innovative and interactive learning media in elementary schools. One learning medium that integrates printed and digital technology is the Augmented Reality (AR) based Pop Up Book. This study aims to analyze the use of AR based Pop-Up Book media as a storytelling medium in Indonesian language learning for fourth-grade elementary school students. This research employed a descriptive qualitative approach. The participants of this study consisted of one teacher and 25 fourth-grade students at SD Kemala Bhayangkari 5 Lamongan. The object of the research was the use of AR-based Pop-Up Book media in storytelling activities. Data were collected through observation, interviews, and documentation. The data were analyzed using the interactive model of Miles and Huberman, which includes data reduction, data display, and conclusion drawing. The findings indicate that the use of AR-based Pop-Up Book media increases students' attention and engagement in storytelling activities, helps them understand the content of the story, and improves their confidence in telling stories orally. Therefore, AR-based Pop-Up Book media can serve as an innovative and relevant alternative learning medium in Indonesian language learning for fourth-grade elementary school students.

Keywords: *Augmented Reality; Pop-Up Books; Storytelling Media; Indonesian Language Learning.*

Received: 9 February, 2026	Revised: 10 March 2026	Accepted: 01 April 2026	Published: June 30, 2026
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Citation (APA Style):

Sholihah, H. et al. (2026). Analysis Of The Use Of Augmented Reality-Based Pop-Up Book Media As A Storytelling Media In Indonesian Language Learning In Grade IV Elementary School. *JELEDUC: Journal of Elementary Education*. 3(1), 1–9. DOI: 10.38040/jeleduc.v3i1.1458

INTRODUCTION

Education is an effort made to guide students through a learning process provided by adults or educators, so that students are able to live independently. The educational process can be implemented through guidance, learning, and training activities (Iswan et al., 2024). Education aims to develop individual potential holistically, impart and expand knowledge, build character, equip students to be ready to face the world of work, and instill social and cultural values in community life (Anak Agung Sagung Oka Anggrenna, Asti Melani Putri, 2024). Today's educators are required to have adequate digital literacy skills to optimally engage students in learning in the digital era (Sagala et al., 2024). Globalization increasingly emphasizes the urgency for educators to adapt to technological developments, so that their role is no longer limited to delivering material, but rather as a learning facilitator who encourages the development of various skills. In this context, teachers utilize a variety of digital tools, such as multimedia learning media, online collaboration platforms, and adaptive learning systems to tailor the learning process to the needs and characteristics of individual students. The shift toward personalized, interactive, and collaborative learning is one of the main indicators of quality education in the digital era (Judijanto, 2024). In essence, education plays a role as a means of developing the potential of quality human resources, to continue to adapt and innovate (Chastanti et al., 2020).

Technological developments are occurring rapidly in line with the demands of an increasingly modern era, resulting in the creation of various advanced technologies to meet human needs. This progress has also improved the quality of life, making people increasingly dependent on computers for almost every daily activity (Pratama, 2022). The presence of technology has influenced many aspects of life by making various activities easier, faster, and more efficient (Khairi et al., 2025). Technology is not only present in the government, economic, or health sectors, but has also penetrated the world of education, where its implementation has a significant impact on the teaching and learning process. The use of technology in an educational context can create a more effective and innovative learning environment, allowing students and teachers to interact more meaningfully in learning activities (Muhafid et al., 2023). In Indonesian language learning, the use of technological media has been encouraged to support the development of various language competencies, including speaking, reading, writing, and listening skills.

Language skills have a fundamental role in basic education because they are the main means for students to receive, process and convey information (Ubaidillah & Holis, 2025). One component of language skills that needs to be developed from an early age is speaking, particularly storytelling. At the elementary school level, this ability not only contributes to academic achievement but also influences students' emotional, social, and cognitive development (Putri et al., 2025). In classroom learning practices, storytelling skills often do not receive adequate attention, while the learning strategies applied tend to be conventional and less able to attract the interest of students who have diverse learning characteristics.

Storytelling is an activity that combines the ability to report with inviting or convincing, as well as conveying the contents of the story to other people (Sunardi, 2023). Storytelling is one aspect of language skills that students need to master. Storytelling aims to instill moral values and positive behavior in children so they can grow in a balanced way, as well as develop cognitive, emotional, and psychomotor abilities (Apriani, 2023). In storytelling activities, students are required to have the ability to convey concepts clearly so that they can be understood and provide benefits to the listener (Senjaya et al.,). Current conditions indicate that many students still lack optimal storytelling skills, even though formal storytelling instruction has been introduced since the early grades of elementary school. In the fourth-grade independence curriculum, the storytelling skill students must master is

retelling the contents of fables they have read. However, many fourth-grade students still have not achieved the expected skills. This is the case at Kemala Bhayangkari 5 Elementary School, Lamongan.

Based on initial observations conducted on February 6, 2026, in the fourth grade of Kemala Bhayangkari 5 Elementary School, Lamongan, it was found that during the storytelling learning process, teachers only used textbooks or storybooks without using interactive learning media. Students were only asked to read, either orally or silently. Some teachers were still not proficient in applying technology-based media. In learning practices, storytelling activities were often read by the teacher, while students only played a passive role as listeners. This condition caused students to easily feel bored, sleepy, and lack focus so that they tended to do other activities outside of learning. Student interest in the stories presented was also relatively low, especially for students who had not yet fluent reading skills. As a result, not all students were able to understand the story texts they read or listened to. This impacted students' difficulties when asked to retell stories they had read or listened to. Therefore, in storytelling activities, students needed the support of interesting learning media. Based on the observation results, the use of Augmented Reality media was considered capable of helping students in understanding the learning material. In line with this, researchers plan to develop Augmented Reality based popup book media that is tailored to the needs of students, with a fable story about Bimo's honesty theme.

Pop-Up Book is a type of book in which there are pieces of images that can appear in three dimensions when the page is opened (Raharja, 2022). The use of Pop Up Book learning media in the learning process is expected to increase students' motivation and interest in learning. Pop Up Book media is considered appropriate to the characteristics and developmental potential of children because it is practical, simple, and interesting. In addition, the selection of Pop Up Book media is considered appropriate because its presentation is concrete through a three-dimensional visual display containing illustrations of fable stories, so it can provide a more meaningful learning experience and increase students' interest in the ongoing learning. The use of technology in learning encourages researchers to integrate Pop Up Book media with Augmented Reality media in the implementation process. The use of Augmented Reality allows a combination of the physical world and the virtual world so that it can present more concrete visualizations to students, which ultimately can increase the effectiveness and attractiveness of learning (Einsthendi et al., 2024). Augmented reality media plays a role in bridging the gap between traditional and digital learning by transforming static materials into interactive, virtual three-dimensional displays. This approach is expected to increase student engagement and understanding of the learning material.

Research conducted by Dedy Atmajaya discusses the application of Augmented Reality (AR) as an interactive learning medium for early childhood. In his research, a Marker Based Augmented Reality based learning application was developed using a marker design in the form of a Magic Book. The Magic Book is designed as a collection of markers arranged in one textbook that can be used by teachers and parents as learning media users. In addition to functioning as a marker in the AR application, the Magic Book is also designed as a coloring medium for students. The visual design allows students to color learning objects, so that it not only helps students recognize objects, but also trains creativity and fine motor skills through coloring activities. Thus, the use of the Augmented Reality-based Magic Book is expected to support a more interactive and creative learning process with teacher or parent guidance (Atmajaya, 2017).

Previous research conducted by Regie Wisnu Pradana showed that the application of Augmented Reality (AR) technology in high school learning offers several advantages, particularly in terms of interactivity. AR technology can display three-dimensional objects with an engaging interface that resembles their original form, thereby helping to improve students' reasoning and imagination skills in understanding the subject matter (Pradana, 2020).

Research by Dwi Sukma Wijayanti and colleagues developed a Pop-Up Book media supported by Augmented Reality (AR) technology to improve understanding of narrative texts in fourth-grade elementary school students. This media was designed to overcome the limited variety of media in Indonesian language learning, especially narrative text material, by involving teachers, students, and media experts in the development process and feasibility testing. The results of the study showed that the AR based Pop-Up Book media is feasible for practical use and received positive responses from teachers and students with high validity scores for both material and media aspects. These findings indicate that the integration of AR technology in Pop-Up Books can facilitate the understanding of learning content in a more interesting and interactive way (Wijayanti et al., 2025).

The aim of this study is to determine the use of Pop Up Book learning media based on Augmented Reality in Indonesian language storytelling learning in grade IV of elementary school.

METHODS

This study uses a qualitative research approach, with the researcher employing descriptive qualitative analysis techniques. Qualitative descriptive research methods are used to discover knowledge or theories related to previous research through books and national and international journals (Waruwu, 2024). Qualitative research is a research method used to explore and understand social phenomena in depth by emphasizing the interpretation of context, experience, and the perspectives of the individuals involved in it. The validity of triangulation data techniques, namely by comparing data from observations, interviews, and documentation to obtain valid and reliable data (Jailani, 2023). In the review process, researchers look for similarities, find differences, provide views, summarize and combine into a new idea. This study aims to gain an in depth understanding of the use of Pop-Up Book media based on Augmented Reality as a storytelling medium in Indonesian language learning for grade IV Elementary School. This study does not focus on testing hypotheses, but rather on describing learning phenomena as they occur naturally in the classroom.

The research was conducted at Kemala Bhayangkari 5 Elementary School, Lamongan, in the even semester of the 2026 academic year. The subjects consisted of fourth-grade teachers and fourth-grade elementary school students, while the object of the research was the use of Augmented Reality-based Pop-Up Book media in storytelling activities in Indonesian language learning. The selection of subjects and objects was adjusted to the focus of the research, which emphasized the process and experience of using learning media.

Data collection techniques in this study were conducted through observation, interviews, and documentation. Observations were conducted to directly observe the storytelling learning process using Pop-Up Book media based on Augmented Reality, including student activities and how the teacher utilized the media. Interviews were conducted with the fourth-grade teacher and several students to gather relevant information.

The research instruments used included observation sheets, interview guidelines, and documentation forms. These instruments were developed based on indicators of learning media use and student storytelling activities to ensure the data obtained aligns with the research objectives. The instruments served as aids in systematic and directed data collection throughout the research process.

Data analysis was carried out qualitatively using the interactive analysis model of Miles and Huberman (1994), which includes the stages of data reduction, data presentation, and drawing conclusions (Sugiyono, 2013).

RESULTS AND DISCUSSION

A pop-up book is a type of book equipped with moving parts or three-dimensional elements that can present a compelling visualization of the story. The images appear and move when the pages are turned, thereby increasing students' interest and enthusiasm for learning. Furthermore, pop-up books can be used both individually and in group learning activities (Erica & Sukmawarti, 2021).

The results of this study were obtained through observation, interviews, and documentation of the use of Augmented Reality-based Pop-Up Book media as a storytelling medium in Indonesian language learning in fourth-grade elementary schools. This study was conducted to obtain a concrete picture of how the media is used in the learning process, how students respond and engage during storytelling activities, and how the media supports students' understanding of the story's content.

The research results are presented descriptively based on indicators established in the research instrument, which include student activities, storytelling processes, and the use of learning media. The presentation of the research results aims to provide a comprehensive understanding of the use of Augmented Reality-based Pop-Up Book media in storytelling learning, without conducting hypothesis testing, but rather emphasizing the analysis of learning phenomena occurring in the classroom.

Table 1. Observation Results of the Use of Pop-Up Book Media Based on Augmented Reality

No	Observed Aspects	Indicator	Observation result
1	Student Activities	Student attention during learning	Very good
		Student activity in storytelling activities	Good
		Students' enthusiasm for media	Very good
2	Storytelling Process	Understanding the content of the story	Good
		The sequence of the story	Good
		Eloquence	Enough
		Expression and intonation	Good
3	Utilization of Media	Ease of use of media	Good
		The attractiveness of media display	Very good
		The benefits of media in helping to tell stories	Very good

Based on the observation results in Table 1, student activity in storytelling using Pop-Up Book media based on Augmented Reality was categorized as good to excellent in most indicators. Students showed high attention and enthusiasm during the learning process, as reflected in their focus when observing the media and following the teacher's explanations. The three-dimensional visual display presented through Augmented Reality technology in the Pop-Up Book helped attract students' interest and increase their concentration in understanding the story's content. This finding is consistent with previous studies reporting that technology-based interactive media can enhance student engagement, facilitate conceptual understanding, and support more meaningful learning experiences in elementary education (Maulidan & Wiratama, 2025).

Storytelling is the activity of conveying information, ideas or experiences to someone verbally in a coherent and clear manner (Hidaya, 2024).



Figure 1. Students using AR assistance



Figure 2. Students retell the content of the story

In terms of storytelling, students were able to understand the story, recognize characters, and convey the storyline coherently with the help of the media used. Augmented Reality-based Pop-Up Book media made it easier for students to remember and organize the story sequence through interesting visualizations. However, in terms of speaking proficiency indicators, several students still needed teacher guidance, especially in terms of fluency and the use of appropriate intonation. Overall, the use of Augmented Reality-based Pop-Up Book media made a positive contribution to student activities, the storytelling process, and student engagement in Indonesian language learning in grade IV of elementary school.

Augmented reality Augmented Reality (AR) can be defined as a technology that combines the real world with the virtual world. In other words, Augmented Reality (AR) presents an object in the form of a video or photo/image into the real world in three dimensions. Augmented Reality (AR) can help visualize an abstract concept, thereby improving understanding of an object's structure (Alfitriani et al., 2021).



Figure 3. Interview with the fourth grade teacher



Figure 4. Interview with fourth grade students

Interviews with fourth-grade teachers revealed that the use of Augmented Reality-based Pop-Up Books helped create a more lively and interactive learning environment. Teachers reported that students became more confident and confident in telling stories orally. These findings emphasize that teachers remain central in facilitating technology-enhanced learning by guiding students' interactions with digital media and ensuring that technological tools are integrated into meaningful

pedagogical practices (Putra & Saputra, 2025). Furthermore, they found this medium helped students understand story elements such as characters, plot, and setting more concretely.

Interviews with fourth-grade students showed that the use of Augmented Reality-based Pop-Up Book media provided an interesting and enjoyable learning experience in storytelling activities. Most students stated that the media was different from learning media commonly used in class. The three-dimensional image display that appeared through Augmented Reality technology made students more interested in paying attention to the story content and participating in the learning with enthusiasm. Students felt that learning was not boring because they could see the story objects more realistically and interactively. Student learning motivation can be measured by the drive to learn, persistence, interest, and enjoyment in solving problems. The increase in student learning interest is shown by the results of research showing that Pop-up Book material can encourage fourth-grade elementary school students to be more interested in learning (Muzaki et al., 2024).

In addition to increasing interest, Augmented Reality-based Pop-Up Books also help students understand the story. Interviews revealed that visualizing the characters and plot made it easier for them to remember the story's sequence and understand the message. Several students reported that seeing moving images and three-dimensional shapes made it easier for them to retell the story coherently than simply reading text from a traditional book. Interactive learning media have been shown to improve students' understanding by presenting abstract concepts in a more concrete and meaningful manner (Maulida & Wiratama, 2025).

The interviews above show that students and teachers responded positively to the use of Augmented Reality-based Pop-Up Books. This medium is considered effective in increasing learning interest, aiding story comprehension, and encouraging students' confidence in storytelling activities during Indonesian language learning in fourth-grade elementary schools.

CONCLUSION

Based on the research results and discussion outlined above, it can be concluded that the use of Augmented Reality-based Pop-Up Books in Indonesian language learning for fourth-grade elementary school students has a positive impact on storytelling. This media is able to attract students' attention and increase their enthusiasm during learning activities, allowing them to be more focused and actively engaged in the learning process.

The use of Augmented Reality-based Pop-Up Books also helps students understand the story, identify characters, and structure the plot coherently. The three-dimensional visualization of objects displayed through Augmented Reality technology makes it easier for students to remember and retell the story. Furthermore, this medium helps boost students' confidence in storytelling, although some students still require teacher guidance to improve their fluency and use of appropriate intonation.

Thus, Augmented Reality-based Pop-Up Books can be used as an innovative and relevant alternative learning medium to support storytelling skills in Indonesian language learning in fourth-grade elementary schools. However, the successful use of this medium still requires the role of teachers in directing, guiding, and adapting its use to students' characteristics and needs.

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