

**SEMARANG HERITAGE IN 3D: DEVELOPING  
CONTENT OF AN INTERACTIVE POP-UP BOOK ON  
HISTORICAL SITES AS A LEARNING MEDIUM FOR  
ELEMENTARY SCHOOL CHILDREN**



**FINAL ASSIGNMENT**

A Partial Fulfilment of the Requirements for the Applied Foreign  
Language Bachelor Degree

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**2025**

## STATEMENT OF ORIGINALITY

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# APPROVAL SHEET

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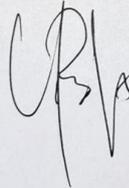
**Semarang Heritage in 3D: Exploring Historical Sites through an Interactive Pop-Up  
Book for Elementary School Children**

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## **ABSTRACT**

The aim of this research is to develop an innovative learning medium in the form of an interactive pop-up book entitled "Time Travelers: Uncovering Semarang History," intended for elementary school students. The book is designed to introduce the local history of Semarang City in a fun, visually appealing way that is easily understood by children. This study uses the Research and Development (R&D) method, adapted from the Borg and Gall (1983) development model. This method consists of eight stages: data and information collection; planning; development of the initial product form; initial field trial; revision of the main product; operational field trial; final product revision; and dissemination and implementation. The product was developed through a design process involving the selection of visual characters, color schemes appropriate for historical objects, interactive layouts, and light, easily understandable language. The book also has a mini-quiz feature to encourage direct interaction with readers. Responses from 31 participants in the trial stage showed that the pop-up book is feasible, interesting, and effective as a medium for learning history. This study concludes that this book can serve as an enjoyable educational resource while promoting the preservation of local culture from an early age.

Keywords: Pop-up book, Educational Media, Elementary students, Semarang historical sites, R&D Methods

## **ABSTRAK**

Penelitian ini bertujuan untuk mengembangkan media pembelajaran inovatif berupa buku pop-up interaktif berjudul “Time Travelers: Uncovering Semarang History”, yang ditujukan bagi siswa sekolah dasar. Media ini dirancang untuk mengenalkan sejarah lokal Kota Semarang dengan cara yang menyenangkan, visual yang menarik dan mudah dipahami oleh anak-anak. Pendekatan yang digunakan dalam penelitian ini adalah metode Research and Development (R&D) yang diadaptasi dari model pengembangan Borg and Gall (1983), yang terdiri dari delapan tahapan utama: pengumpulan data dan informasi, perencanaan, pengembangan bentuk awal produk, uji coba lapangan awal, revisi produk utama, uji coba lapangan operasional, revisi akhir produk, dan diseminasi serta implementasi. Produk dikembangkan melalui proses desain yang melibatkan pemilihan karakter visual, skema warna yang sesuai dengan objek bersejarah, tata letak interaktif, serta penggunaan bahasa yang ringan dan ramah anak. Buku ini juga dilengkapi dengan fitur kuis mini sebagai bentuk interaksi langsung dengan pembaca. Hasil tanggapan dari 31 responden pada tahap uji coba menunjukkan bahwa buku pop-up ini dinyatakan layak, menarik, dan efektif digunakan sebagai media pembelajaran sejarah. Penelitian ini menyimpulkan bahwa buku ini dapat menjadi alternatif media edukatif yang menyenangkan sekaligus memperkuat pelestarian budaya lokal sejak usia dini.

Kata Kunci : Buku Pop-up, Media Pembelajaran, Siswa Sekolah Dasar, Situs-Situs Bersejarah Semarang, Metode R&D

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# CHAPTER I

## INTRODUCTION

### 1.1 Research Background

Indonesia is known for its cultural richness and diversity. The country is home to hundreds of tribes, languages, and beliefs that shape its identity (Yunita et al., 2024). This diversity enriches national identity and can be utilized as an educational resource. Integrating local wisdom into learning has been shown to effectively shape students' character, instilling values such as tolerance, cooperation, and social responsibility (Maharani and Muhtar, 2021).

History is not only a collection of facts about what, who, when, and where an event occurred, but also an explanation of how and why the event occurred. Rosanawati (2024) defines history as the study of human activities that undergo continuous change over time, which is known as the diachronic process. Each region has its own historical traces that provide identity and sense of belonging to its people. According to a study by Yuhardi & Meri (2022), the study of local history can increase student engagement by connecting the subject matter to the surrounding environment.

As Pramono (2024) points out, history is not just a collection of facts about the past. History is the result of interpretation, an interpretation based on rational and objective scientific methods. Overall, the integration of the interpretive approach and the use of local history learning resources in history education can improve students' understanding of history as a dynamic process and relevant to their lives.

In the teaching process, the use of learning media is often overlooked by teachers. This phenomenon can be attributed to various constraints, including limited time, financial resources, and physical energy. Consequently, learning media is frequently disregarded, leading to a paucity of varied teaching methods. According to Rhamdani and Ramadan (2024), the underuse of media in educational settings can lead to a monotonous teaching and learning process, hindering the establishment of an optimal learning environment.

One solution to this problem is the use of pop-up books. According to Umam, Bakhtiar, and Iskandar (2019), pop-up books represent a significant innovation in

the field of literacy, employing advanced 3D design techniques that involve folding, scrolling, and turning. The advantage of pop-up books lies in their ability to present information in a more interactive and engaging way. The images contained within this book can be dragged, opened to view additional information, and appear in a three-dimensional visual form that resembles the original object. The uniqueness of pop-up books compared to ordinary books lies in the combination of text, images, visual effects, and color games that make them more interesting. This could be particularly helpful in presenting material that some may find uninteresting, such as history. Pop-up books can increase children's interest in learning and make the learning process more enjoyable with a more interactive display.

Recent studies have supported the effectiveness of pop-up books in improving students' learning outcomes. For example, a study by Harmanto et al. (2024) showed that the use of pop-up book media in learning the history of Indonesian independence improved the memory and learning outcomes of fifth grade elementary school students. Expert validation of the materials and media showed a high rate of feasibility, and pretest and posttest results showed a significant increase in student scores. In addition, a study by Surya, Fascia, and Lailiyah (2023), developed a pop-up book media for social studies learning about the history of Hindu-Buddhist kingdoms in Indonesia for fifth grade elementary school students. Based on the results of validation by materials and media experts, the product was found to be very feasible for use in history learning activities.

The city of Semarang holds important historical sites, such as Lawang Sewu and Kota Lama, as well as other colonial buildings that are an important part of Indonesia's history. The lack of use of local content in general teaching materials indicates a lack of specific teaching resources related to local historical sites (Suherman and Winarso, 2021). This presents both an opportunity and a challenge in developing contextualized educational media. Therefore, innovations in learning media are needed that present historical information visually and interactively to help students more easily understand and become interested in learning about the history of their region. This approach is believed to foster cultural awareness and strengthen local identity in students from an early age.

Based on these findings, this study aims to prove that pop-up books are not only effective in increasing learning interest in science, but can also be applied to improve historical knowledge in children. History is often considered a less interesting material for children because it tends to be theoretical and full of memorization. However, by using pop-up books, historical events can be presented visually and interactively, thus making children more interested and involved in learning.

To address this challenge, the Research and Development (R&D) method is applied to design, produce, and validate an interactive pop-up book titled *Time Travelers: Uncovering Semarang History* for elementary school students. This method enables the product to be developed through systematic stages, starting from identifying needs, designing content, producing prototypes, conducting trials, revising based on feedback, and validating with experts, ensuring that the final product is both educationally effective and visually engaging.

The research was conducted at SDN Grogol Selatan 17, South Jakarta, which was selected because it aligns with the target audience criteria for the interactive pop-up book. In addition, the school has not yet had printed learning media that are creatively designed and contextually relevant to help students understand local history in an engaging and enjoyable way. This gap makes the school an appropriate setting for testing and developing the product.

This research focuses on the creation of an interactive pop-up book aimed at introducing historical topics to elementary school children in an engaging and accessible way. By combining visual elements, storytelling, and interactive features, the pop-up book is designed to become an innovative learning medium that transforms history into a fun and memorable subject. The development process emphasizes how historical content can be packaged attractively, making it easier for children to understand and encouraging them to appreciate cultural heritage and the values embedded in it.

## **1.2 Statements of The Problem**

From the background that has been explained before, a pop-up book is the most effective one since Semarang City has many kinds of tourist attractions. The research question in this study is as follows:

1. How is the process of developing an interactive pop-up book as an educational medium for elementary school children?"
2. How does the users' feedback to this interactive pop-up book as a history learning media?

## **1.3 Objectives of Research**

Based on the statement above, the purpose of this research can be seen as follows:

1. To explain the process of designing and developing an interactive pop-up book that introduces historical places in Semarang as a contextual and engaging learning medium for elementary school students
2. To explore and analyze users' feedback on the interactive pop-up book as a history learning medium

## **1.4 Significance of The Research**

Based on the statement above, there are two types of significance of the research, such as:

### **a. Theoretical Advantage**

The results of this research contributes to the development of educational media that emphasizes contextual learning

### **b. Practical Advantage**

1. It can provide an engaging learning alternative that helps elementary school children understand and appreciate local history through a visual and interactive medium
2. It contributes to the development of creative and child-friendly educational materials, particularly in the form of pop-up book that combine visuals and interactivity

## **1.5 Research Output**

The output of this research is an interactive pop-up titled Time Travelers : Uncovering Semarang History, the book is about historical places, especially in Semarang City. This book is not only developed in an attractive 3D form but this book is formed and developed into an educational, effective, and interactive book so that it is expected to increase children's involvement and interest in learning about history. Researchers took several historical places that have historical value such as Lawang Sewu, Sam Poo Kong, Blenduk Church, and also Semarang Tawang Station. Each historical place is formed in 3D pop-up format and the material presented in the form of pop-up and also informative tailored to elementary school children. The book consists of 36 pages, which include 20 pages of 3D pop-up content with narrative explanations of each historical site, and 16 additional pages featuring interactive elements such as fun facts, glossary, information about Semarang City and also several mini quizzes. With the book developed in this way, it is hoped that it can help learning media as an alternative media that is interesting, contextual, and also relevant to the characteristics and needs of the current generation.

## **CHAPTER II**

### **LITERATURE REVIEW**

#### **2.1 Historical Sites**

Historic sites are real locations that house cultural relics of the past. These relics include artifacts, buildings, and structures that are valuable for reconstructing the history of a civilization or community (Susanti et al., 2024). These sites not only serve as physical remnants but also play an important role in education, national identity, and community cohesion. As the foundation of national unity, historical sites contain symbolic, educational, and aesthetic values that foster historical awareness and a sense of place and time among the younger generation (Brata et al., 2021).

The development of a tourist attraction requires more than just uniqueness; it must also offer a visitor experience that is worth their time (Hayati, 2014). Historical buildings that serve as educational tourism destinations have significant potential to benefit the community. These historical buildings offer a unique opportunity to learn history in a fun and educational setting, as they are located in the very places where historical events occurred. When developing tourist attractions, it is essential to approach the conservation of historical buildings with care to avoid compromising their integrity. This requires the involvement of numerous stakeholders to ensure the ongoing maintenance of these buildings as cultural heritage and their transformation into welcoming tourist attractions.

#### **2.2 Book**

Books are traditional learning media that have long been an integral part of education. As one of the main learning resources, books have a central role in conveying information and knowledge systematically to students. According to Nazilah et al. (2014) in Pratiwi and Widyaningrum (2021), a quality textbook is defined as a book that provides substantial material content and is presented in an appealing manner. However, it has been observed that many books still prioritize other factors over these crucial elements. The advantages of books as learning media are in their ability to convey material in depth and breadth, and are easily

accessible to various groups. Along with the development of technology and increasingly complex pedagogical needs, books have undergone a transformation both in terms of form and presentation.

Books are among the most widely used media in the learning process (Saputra et al., 2025). As primary sources of information, books play a central role in supporting education across all levels. In line with technological advancements, traditional printed books have evolved into digital formats, or e-books, which provide broader access and increased convenience for users. In addition to digital formats, interactive books such as pop-up books have been developed to enhance engagement, particularly among young readers. Supporting this, Masruroh, Aziz and Firdaus (2023) found an increase in students' understanding of local cultural heritage from 37% to 81%.

### **2.3 Pop Up Book**

In recent years, especially in the context of early childhood education, pop-up books have become one of the innovations in learning media that have received increasing attention. Compared to traditional books, pop-up books provide a more immersive learning experience by integrating three-dimensional (3D) elements that automatically appear when the page is opened. The use of pop-up books in learning has been shown to be effective in increasing student attention and engagement with the material being taught, according to research conducted by Mustika, Wijaya, and Sudiana (2020). This is due to the dynamic and interactive nature of pop-up books, which allows learners to interact directly with the visual elements displayed. With the combination of engaging visuals and interactive elements, pop-up books become an effective medium for delivering information in a more in-depth and entertaining way.

The ability of pop-up books to facilitate the different learning styles of students is one of the main advantages of pop-up books in the context of learning. According to Yanto, Muliana, and Zubair (2023), the integration of text, images, and three-dimensional (3D) elements in pop-up books allows learners to gain a more optimal understanding of the material presented. This perspective is supported by the results

of a study conducted by Rhamdhani and Ramadan (2024). The study showed that the use of pop-up books in science learning significantly contributed to improving students' understanding of complex concepts. Therefore, pop-up books can be used as an alternative learning medium that is not only innovative but also effective in supporting the cognitive processes of students by providing a more immersive and interactive learning experience.

One of the innovative forms that have emerged in response to the need for more interesting and interactive learning is the pop-up book. This transformation is not only a change in the physical form, but also an increase in the quality of interaction between the learner and the learning material. Research by Winnuly et al. (2023) found that pop-up books can significantly increase students' interest in reading and comprehension, reaching an effectiveness rate of 85%, particularly in primary education. This is because pop-up books stimulate interest, strengthen visual memory, and help students understand abstract concepts through concrete representations that can be directly observed and touched.

## **2.4 Media**

Media is a means of communication that functions as an intermediary in the delivery of messages from the sender to the receiver. In the context of learning, media is defined as any form of tool that is used to channel messages and information in order to support the teaching and learning process. In addition to the material that is delivered to children, what teachers need to pay attention to is the adaptation of the characteristics of students or children (Yanto, Muliana & Zubair, 2023). Such as learning style interests, social and cultural conditions, children's age, and also initial abilities.

Media as the context of the lesson must also be in accordance with the target participants, such as children, the learning media used must be abstract in nature that is presented to be real so that children can be helped in explaining the material presented. One of the media that can be used as learning materials is books. Learning that uses media aids is expected to clarify the message conveyed and also achieve educational goals effectively and efficiently.

#### **2.4.1 Educational Media**

Learning media is a tool or a means that is used to convey the subject matter to the students with the aim of facilitating the learning process. According to Kasmawati, Ekadayanti, and Putri (2025), learning media have undergone a significant transformation from traditional to digital forms as information technology developed. This transformation allows for the presentation of material that is more interactive and interesting. Thus, it can increase students' involvement in the learning process.

Learning media also plays a role in increasing students' interest in learning certain subjects. Yusnaldi and Meri (2025) found that the use of learning media that is in accordance with the characteristics of students can increase their interest and motivation to learn. Media that is interesting and relevant to students' daily lives can make the subject matter easier to understand and remember.

Educational media can be used to introduce historical sites to elementary school students in the context of local cultural preservation. Through the combination of visual elements and interesting narratives, educational media can help students understand and appreciate local cultural heritage such as historical sites in Semarang.

#### **2.4.2 Interactive Educational Media**

Interactivity, in the context of digital learning, is a crucial element that determines the extent to which learners are involved in the learning process. The term refers to the ability of a learning system or medium to create a two-way communication between the user (learner) and the presented content. In the context of elementary school students, interactive media has an important

role in creating an active and participatory learning process. This type of media allows students to not only be passive recipients of information, but also to be directly involved in learning activities through various choices, exploration of material, and receiving direct feedback (Ika & Ari, 2025).

Educational media is an important element in the learning process because it includes all tools, means, and communication channels used to transmit information, knowledge, and skills to students. Furthermore, Nursalamah, Jayadinata, and Sunaengsih (2022) explain that interactive learning media is an educational tool that combines visual, audio, and user interaction elements to deliver learning materials. This media is designed not only to present information in one direction, but to provide opportunities for learners to interact with the content, thus encouraging students' emotional and cognitive involvement in the learning process.

According to Kusuma and Pratiwi (2023), the use of learning media based on local wisdom, such as pop-up books that promote cultural values, can stimulate students' imagination and creativity. Thus, using interactive learning media not only serves as a tool to understand academic material, but also as a means to develop a creative, analytical, and solving mindset, which is needed to face the challenges of the digital era.

## **2.5 Elementary School Children**

In elementary school, children typically find themselves in the cognitive phase. During this stage, it is understood that children are not yet able to think abstractly optimally. For this reason, they tend to benefit from visual stimuli and direct experience, which can help them understand more complex concepts, including history. It has been suggested that children may more readily understand concepts through experience and visualization. Pop-up books present three-dimensional visual elements that appear when the page is opened, thus providing a kinesthetic and visual experience (Aentika et al., 2024). The use of pop-up books as learning media has been observed to enhance student learning motivation, as it facilitates a deeper understanding of the subject matter. The study of Aentika et al. (2024) showed that pop-up book media is effective in improving elementary students'

writing skills because it facilitates creative expression of ideas through visual elements and three-dimensional text.

Pop-up books present stories or information in three-dimensional form, which some may find to be visually appealing. This format can also facilitate active exploration, such as opening, moving, or folding certain parts of the book. This multisensory learning experience has the potential to enhance children's memory and understanding of the material being studied. Some studies by Umam, Bakhtiar, and Iskandar (2019) have also shown that this media can improve students' concentration, enthusiasm, and engagement in the learning process.

At the primary school level, there is an opportunity to gently introduce children to the values of local culture and history. It is possible that children who are familiar with the culture and history of their city from an early age may grow into a generation that is more aware and concerned about the preservation of cultural heritage. In the context of Semarang City, pop-up books with local heritage themes, such as Lawang Sewu, Old Town, or Blenduk Church, have the potential to be more readily accepted and remembered by children when presented visually and narratively. The use of pop-up media in this way could contribute to a deeper understanding of history and the development of cultural awareness from an early age.

## **2.6 Previous Studies**

A number of previous studies have shown that pop-up books are effective in improving elementary students' comprehension and learning outcomes, especially in social studies with historical and cultural elements. Rahayu and Marzuki (2024) found through a meta-analysis that the use of pop-up books can significantly improve learning outcomes by 81.30%. Masruroh, Aziz and Firdaus (2023) found an increase in students' understanding of local cultural heritage from 37% to 81% using the Classroom Action Research (CAR) method. Surya, Fasica and Lailiyah. (2023) also showed an increase in scores from 50 to 80 in the learning of Hindu-Buddhist history through the use of 3D visual-based pop-up book media. From these three studies, it can be concluded that pop-up books are learning media that

have been proven to support the improvement of learning outcomes, especially in the context of history and culture. However, in most of these studies, general or national historical material was used, and local content such as the cultural heritage of Semarang was not specifically addressed.

In addition, visualization in a more complex and aesthetically appealing 3D form has not been the focus of existing media development. This study presents an update of previous research by combining three innovative aspects: (1) using Semarang's local content as history teaching material, (2) using interactive 3D pop-up book forms as packaging developed with a modern and child-friendly design approach, and (3) presenting history learning in an edutainment approach to stimulate students' interest and emotional engagement. This research is expected to contribute not only to learning outcomes, but also to forming identity and loving local culture from an early age. Therefore, this research makes both practical and theoretical contributions to the world of basic education.

## CHAPTER III

### RESEARCH METHODOLOGY

This chapter consists of what technique of data collection was used for this research and the process of Research and Development (R&D), including the research setting, how research collects the data, and how to analyse the data which has been collected.

#### 3.1 Research Methodology

This research aimed to create an interactive pop-up book for elementary school children that consists of Semarang Historical Places. To support the study, the appropriate design applied was Research and Development (R&D). According to Borg and Gall as cited in Gustiani (2019), states "educational Research and Development (R&D) is a process used to develop and validate educational products". Borg and Gall (1983) in their book outlined ten steps for conducting the R&D method. The complete sequence of these steps is detailed in the following section:

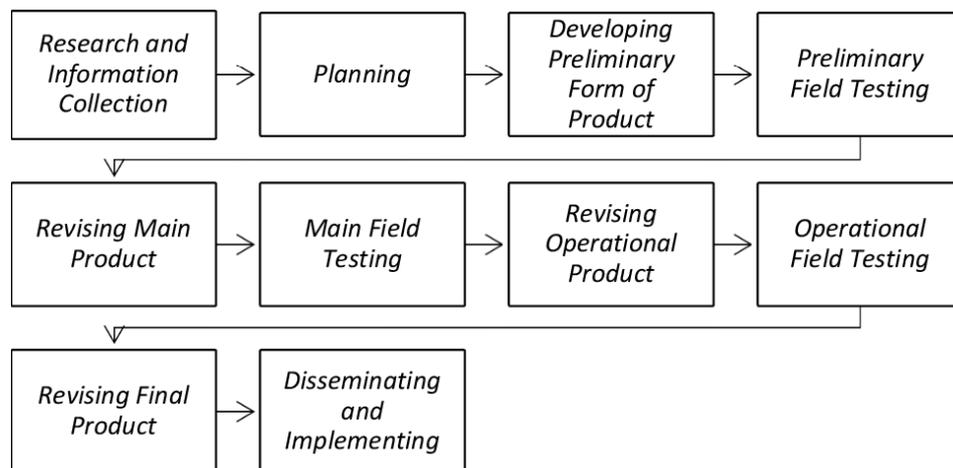


Figure 3. 1 R&D Method Steps (Borg & Gall, 1983)

Borg and Gall's R&D model aims not merely to produce new products, but also to test the effectiveness of these products through systematic testing stages before the products are actually broadly implemented. This methodology has a systematic process that aims to find solutions to existing problems, as well as create innovations that can provide great benefits to society and industry. This process involves various stages starting from problem identification, planning, data collection, data analysis, to implementation and evaluation. The following is an explanation of the R&D steps based on the Borg and Gall model:

1. Research and Information Collecting

In the first step, the research begins by collecting data on related products and analyzing the needs required and studying the literature review and preparing the research concept.

2. Planning

This stage includes identifying the required competencies to address the research problem, defining clear objectives for each phase, and outlining the research procedures along with conducting a feasibility analysis.

3. Develop Preliminary Form Product

At this stage the initial product is developed by assembling essential components such as guidelines and manuals, along with evaluating the suitability of the materials and tools used during the research process.

4. Preliminary Field Testing

This stage a small scale preliminary test is carried out involving a limited group of participants. Data gathered through methods such as interviews, observations, or questionnaires to evaluate the early version of the product and its potential effectiveness.

5. Main Product Revision

The trial product is revised based on the feedback and data obtained during the initial testing phase. This revision process may go through several iterations, depending on the evaluation results. The improved

product is then prepared for implementation in a broader testing environment to ensure its quality, usability, and effectiveness.

#### 6. Main Field Testing

This stage, also referred to as the main testing phase, involves evaluating the revised educational product on a broader scale. At this stage, qualitative methods are commonly employed to gather detailed insights regarding the product's usability and effectiveness. In certain cases, an experimental research design may also be applied to obtain more precise and measurable feedback, which will inform further improvements in the subsequent development process.

#### 7. Operational Product Revision

At this stage, the revised product is refined based on data from the main field testing, resulting in an operational model ready for validation. This process ensures the product's feasibility, functionality, and educational values.

#### 8. Operational Field Testing

A validation phase is carried out on a wider scale by involving a larger number of participants and educational institutions. This evaluation process utilizes methods such as questionnaires, interviews, and observations to measure the product's feasibility and effectiveness, with minimal or without direct involvement from the developers during implementation.

#### 9. Revising Final Product

The final refinement is conducted based on the outcomes of the validation phase to guarantee that the product reaches its optimal form and is fully prepared for practical implementation.

#### 10. Disseminating and Implementing

The completed product is disseminated to a broader audience through channels such as seminars, publications, and stakeholder presentations to promote its integration into educational settings or relevant professional fields.

The development of this interactive pop-up book followed the Research and Development (R&D) model adapted from Borg and Gall (1983). Although Borg and Gall originally proposed ten stages, this study adopted a simplified version consisting of eight stages. Each stage was carried out systematically to ensure that the final product was not only educationally relevant but also engaging and suitable for elementary school students. The following diagram illustrates the sequence of the eight development stages implemented in this research.

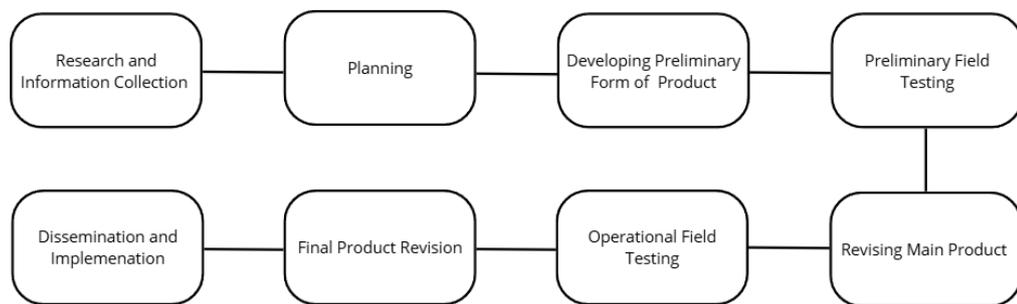


Figure 3. 2 Stages of designing pop-up book

The eight stages that were used by the researchers in the process of creating An Interactive Pop-Up Book for Elementary School Children. The eight stages are (1) research and collecting information, (2) planning, (3) developing preliminary form of product, (4) preliminary field testing, (5) revising main product (6) operational field testing (7) final product revision (8) disseminating and implementing.

### 3.2 Development Procedures

#### 3.2.1 Research and Information Collecting

The starting point for the development of this book was the collection of information about the various sites that were the focus of the research. Data was collected by observing, conducting informal interviews, and documenting. The method that was used in this research is a qualitative research method. According to Sugiyono (2017), a qualitative research method is a method used in the study of natural object conditions, where the researcher is the main instrument, and data collection techniques are

triangulated (combined). The data collection techniques in this study are as follows:

**a. Observation**

According to Sugiyono (2019), observation is a data collection technique by seeing and observing the object of study. In the study of tourist attraction, the researcher observes the building, the history experienced, what heritage is left, and also the information about the tourist attraction. Thus, the researcher conducted an observation method to find out the details of the tourist attraction building.

**b. Interview**

Interviews were used as a data collection method in this study. Interviews are used because they can explore in-depth information from informants. This technique is used to obtain data that cannot be obtained through observation or documentation, through direct question and answer between the researcher and the informant. All results were recorded and analyzed as qualitative data to support product development. The interviews were conducted in a semi-structured manner with flexible question guidelines.

**c. Documentation**

Documents are data sources that are used to complete the research, such as written sources, movies, pictures (photographs), and monuments that provide information for the research process (Nilamsari, 2014). In data collection, unique information about historical tourism, such as buildings and interesting stories that may only be known to a few people, can be obtained through the documentation method. The data can be collected and included for historical storybooks.

### **3.2.2 Planning**

The book design process begins in earnest at this stage. The beginning of this activity is the preparation of the content that will be the main content of the book. Once the content was in place, the next stage was the creation of visual elements in the form of animations, character designs, and the determination of a color palette that would be in line with the educational theme and visually appealing to children. Since the book is a pop-up book and has complex visual interactive elements, the involvement of an experienced illustrator was necessary.

### **3.2.3 Develop Preliminary Form of Product**

After all product elements such as visual design, content, animation, and characters have been developed, the next step is to organize them into a complete product according to the original plan. At this stage, to be consistent with the original concept and purpose of product development, the integration of design and content must be harmonious. All of the previously designed components need to be carefully assembled to create a final product which is both content driven and visually appealing. In this process, it is very important to pay attention to every single detail. Thoroughness is required, both from a technical and aesthetic point of view, so that there are no mistakes in the arrangement of the elements.

### **3.2.4 Preliminary Field Testing**

This stage involved the initial trial of the interactive pop-up book *Time Travelers: Uncovering Semarang History* to gather early feedback on its content, structure, and design elements. The goal of this phase was to identify any areas that required improvement before the product moved into broader testing.

To validate the quality of the product, an expert review was conducted by the supervisor as a material and media expert. The supervisor evaluated the book based on several aspects, including the relevance and clarity of the historical content, the appropriateness of language for elementary school

students, and the functionality of the pop-up mechanisms. Feedback from the expert was documented and used to revise the product for better alignment with educational goals. Feedback from the expert will be documented and used to improve the design and content of the product before moving to a wider field-testing phase. Therefore, there are validation sheet assessed by expert as follows.

Figure 3. 3 Media expert validation form

Figure 3. 4 Material expert validation form

### 3.2.5 Revising Main Product

This stage of product revision after interviews with elementary school teachers, namely the improvement of the layout of pop-up books, such as the location of the delivery of information layout and also visual elements that are carried out to attract the reading ability of elementary school students, so that they are not bored in reading, understanding of the message conveyed, and

also conveyed the shape of existing visual buildings. In addition, color improvements to the pop-up book will also be carried out for the alignment of the eye, so that it is pleasing to the eye and read. The aim of this revision is to optimize the effectiveness of the pop-up book as an interesting and educational learning medium for the primary school level.

### 3.2.6 Operational Field Testing

After making revisions to the developed product, a validation process was conducted by teachers from SDN Grogol Selatan 17, South Jakarta, who served as expert respondents. This validation aimed to assess the feasibility, effectiveness, and relevance of the interactive pop-up book as a learning medium. To gather their responses, a structured questionnaire was distributed digitally via WhatsApp, making it easier for participants to provide feedback remotely and efficiently.

The evaluation focused on several key aspects, including user satisfaction, content clarity, and the contextual relevance of the material for elementary school learners. Teachers were asked to assess both the content and the visual design of the book. The list assessment in the questionnaire can be seen in the table below:

Table 3. 1 List of Statement in The Questioner

<b>Content Aspect</b>	
<b>No</b>	<b>Questions</b>
1	<b>The explanation is clear and makes the content easily understandable</b>
2	<b>The visual appearance of the pop-up book is attractive</b>
3	<b>This pop-up book helps students better understand Semarang's local history</b>

**4 The content in the book is appropriate for 4th–5th grade primary school students**

---

**5 This pop-up book is suitable for use in the classroom setting**

---

**6 The stories and explanations in this book can make children more interested in learning history**

---

**7 What benefits do you see in this book and how does this media support learning outcomes? (Paragraph)**

---

**8 After seeing the educational mini quizzes in the book, what do you think about using this media as a tool for learning local history in the classroom? (Paragraph)**

### **Design-Visual Aspect**

**1 The visual design of the pop-up book is appealing to children**

---

**2 The text in the media is easy for students to read and understand.**

---

**3 This media is interactive and helps students get involved**

---

**4 The combination of colors supports the attractiveness and the clarity of the media.**

---

**5 Does the book’s animated design support children’s reading comfort?**

---

**6 After looking at the contents of this book, what do you think about the topics and places shown (Paragraph)**

**7 How do you think the visual design in this book can arouse children's curiosity? (Paragraph)**

The researchers used a mixed methods approach, namely qualitative and quantitative methods, in the process of data collection and analysis. The qualitative approach was for the exploration of comments, suggestions, and input from respondents that could be directional in the further development of the product. Meanwhile, the quantitative approach was used for the calculation and analysis of the respondents' evaluation scores of the product by means of the Likert scale. With this scale, researchers can measure the level of product effectiveness on the basis of respondents' perceptions in terms of numbers, which can then be statistically interpreted. By combining these two approaches, it is expected that the analysis conducted will be more comprehensive and provide an objective picture of the quality and potential use of the product in learning. Therefore, there are Likert score criteria as follows:

Table 3. 2 Likert Scale Score Levels

<b>No.</b>	<b>Criteria</b>	<b>Score</b>
1.	Strongly Disagree	1
2.	Disagree	2
3.	Agree	3
4.	Strongly Agree	4

The calculation of the percentage of data obtained is processed using the following formula:

$$X = Mx/n$$

M = Average Score

Mx = Total Score

n = Total Respondents

To analyze the quantitative data gathered from expert validation and user responses, a percentage-based approach is employed. This method helps in determining the overall level of agreement or effectiveness perceived by the respondents. The following formula is applied to compute the percentage from the obtained data, allowing the researcher to interpret the results in a measurable and systematic way. This calculation supports the evaluation process by translating qualitative judgments into quantitative scores, which are then used to assess the feasibility and effectiveness of the developed pop-up book.

To measure the pop-up book effectiveness, a likert scale was used with four response levels:

Table 3. 3 Interval Assessment

No.	Intervals	Criteria
1.	1.00 – 1.75	Strongly Disagree
2.	1.75 – 2.50	Disagree
3.	2.50 – 3.25	Agree
4.	3.25 – 4.00	Strongly Agree

If the data analysis results show an average interval value above 3.25, it means that respondents strongly agree with statements in the evaluation instrument. This is an indication that the perception of the users, both teachers and students, towards the development product is very positive. Thus, the

developed media, An Interactive Pop-Up Book for Elementary School Children, can be categorized as a very feasible and effective media to use in learning, especially in introducing local history to elementary school students.

### **3.2.7 Final Product Revision**

Before the product is released and used by the target users, the final stage of revision is of crucial importance. The purpose of this stage is to improve the product by correcting various deficiencies that were still present during the implementation process and previous testing. The final revision serves as a final step to ensure that all pop-up book components are optimized in terms of content, appearance, and functionality. After going through a series of evaluations and receiving feedback from the supervisors and teachers, adjustments need to be made to ensure that the product truly meets the needs and expectations of the users. In this way, a better, more effective, and more practical learning medium to support students' understanding of local history materials can be achieved with An Interactive Pop-Up Book for Elementary School Children.

### **3.2.8 Dissemination & Implementing**

After all the stages of developing a product have been completed, the final step is to get the final product implemented. At this stage, the product, having gone through the process of being revised and refined, is ready to be printed and distributed to SDN Grogol Selatan 17, South Jakarta. It is hoped that it will serve as a learning tool to introduce children to local history in an interesting, interactive, and easy-to-understand way.

## **3.3 Timeline Planning**

To ensure the development of the interactive pop-up book Time Travelers: Uncovering Semarang History proceeded systematically and on schedule, a structured timeline was created. This timeline outlines each stage of the Research and Development (R&D) process from initial research to final report writing and the specific months during which each activity was carried out. By mapping out the

key stages such as research, planning, product development, testing, revision, and dissemination, the timeline served as a guide to maintain workflow efficiency and achieve the project’s objectives within the expected timeframe.

Table 3. 4 Schedule planning

Type of Activity	Activity Time				
	March	April	May	June	July
Research and Information Collecting	■				
Planning		■			
Develop Preliminary Form of Product			■		
Preliminary Field Testing				■	
Revising Main Product					■
Operational Field Testing					■
Final Product Revision					■
Dissemination and Implementation					■
Making Final Project Report					■

### 3.4 Budgeting

The development process of this interactive pop-up book resulted in a tangible product that can be used directly in educational settings. Therefore, throughout this process, the researcher allocated a range of expenses, starting from the design phase to the production of the final pop-up book. The following is a detailed breakdown of the budget incurred during the development of the book.

Table 3. 5 Production cost details

Name	Quantity	Price	Total Price
Illustrator	1x	Rp. 5,060,000	Rp. 5,060,000
Production (Printing)	1x	Rp. 297,500	Rp. 297,500
Production (Printing)	4x	Rp. 252,750	Rp. 1,011,000
Hardcover	5x	Rp. 40,000	Rp. 200,000
Double Tape	12x	Rp. 10,000	Rp. 120,000
Cutter	3x	Rp. 10,000	Rp. 30,000
<b>TOTAL</b>			<b>Rp. 6,718,500</b>

This budget was prepared to reflect all necessary expenses required to produce a pop-up book that is not only functional but also visually appealing. Each cost component was carefully and strategically managed to remain within reasonable financial limits without compromising the quality of the final product. A significant portion of the budget was allocated to illustrator services, considering that engaging and informative visuals not only support readability but also enhance students' interest and attraction toward the final product.

### **3.5 Task Division**

In the development of the interactive pop-up book *Time Travelers: Uncovering Semarang History*, tasks were divided based on each team member's expertise. The researcher was responsible for content development, including selecting historical sites, writing the narratives, and adjusting the language to suit elementary school students.

Meanwhile, the design team handled the visual aspects, such as page layout, illustration style, color palette, and the implementation of interactive pop-up techniques. This collaboration ensured a balance between informative content and engaging visuals, resulting in a child-friendly and educational product.

## **CHAPTER IV**

### **RESULT AND DISCUSSION**

#### **4.1 Result**

##### **4.1.1 The Process of Creating Interactive Pop-Up Book**

This research follows the Research and Development method, starting with Research and Information Collection, followed by Planning, Developing the Preliminary Form of the Product, Preliminary Field Testing, Revising Main Product, Operational Field Testing, Revising Main Product, and Dissemination and Implementation. In this case, the process of creating an interactive pop-up book for elementary school children about historical places in Semarang is described in detail.

##### **4.1.1.1 Research and Information Data Collection**

This stage marked the initial and essential step in developing the interactive pop-up book titled Semarang Heritage in 3D: Exploring Historical Sites through an Interactive Pop-Up Book for Elementary School Children. The main objective of this phase was to gather accurate, relevant, and comprehensive data to support the creation of educational content that is appropriate for the cognitive level of elementary school students. By grounding the development in real historical facts and visual references, the content produced would not only be informative but also engaging and contextual.

##### **a. Observation**

Field observations were conducted not only at several selected historical landmarks in Semarang namely Lawang Sewu, Sam Poo Kong Temple, Blenduk Church, and Semarang Tawang Station, but also at SDN Grogol Selatan 17, South Jakarta through recording as the target school. Visits to historical sites aimed to document architectural characteristics, collect visual references, and understand the historical and cultural significance of each location. Meanwhile, observation allowed the researcher to

examine the classroom environment, students' learning behavior, and the use of existing learning media.

b. Interview

To gain deeper insight into students' engagement and the availability of teaching materials, the researcher conducted interviews with teachers at SDN Grogol Selatan 17, located in South Jakarta. These interviews were held via Google Meet and involved three subject teachers: History, Indonesian Language, and English. The selection of participants was made using purposive sampling, based on the relevance of each teacher's expertise to the development of the book.

1. The History teacher was chosen to assess the relevance and accuracy of historical content presented in the book, ensuring it aligns with learning objectives
2. The English teacher contributed to the evaluation of language style and clarity in the English version of the content, as the book includes bilingual elements.
3. The Indonesian Language teacher helped in refining the narrative style and ensuring that the vocabulary and sentence structure were appropriate for the comprehension level of elementary school students.

Their insights were vital in ensuring that the content would not only be educational but also engaging and age-appropriate.

c. Documentation

Documentation was carried out to capture various aspects during the observation and interview processes. The documentation helped provide a visual and written record that supported the development of the pop-up book and ensured that the materials included were accurate and relevant.

#### 4.1.1.2 Planning

After the data and information collection stage was completed, the process continued with the visual design of the pop-up book. This stage includes making initial sketches, selecting the main visual elements of each historical site, and adjusting the illustration style to be child-friendly. The visual design was made by considering the suitability of the content with the characteristics of elementary school students, both in terms of color, shape and composition. In addition, the selection of fonts and text size is also adjusted to be easily read by children, using typography that is not too complicated and still informative.

The decision to use a pop-up book format was based on its ability to present educational material in a three-dimensional, visual, and interactive manner. Pop-up books not only stimulate students' curiosity and engagement but also help transform abstract historical concepts into more concrete and enjoyable experiences. With visual storytelling and hands-on interaction, this format allows students to explore historical places in an immersive way.

The content planning focused on the selection of four culturally significant historical landmarks in Semarang: Lawang Sewu, Sam Poo Kong Temple, Blenduk Church, and Semarang Tawang Station. These locations were chosen based on their historical value, cultural relevance, and potential to be visually interpreted in pop-up form. In addition to historical narratives, the book was planned to include educational elements such as fun facts, quizzes, mini games, and a glossary, all of which were tailored to the cognitive level of elementary school students. The language was designed to be simple, engaging, and age-appropriate to ensure clarity and reading enjoyment. To ensure its relevance to formal education, the content was aligned with the *Kurikulum Merdeka*, particularly focusing on themes such as cultural diversity, local identity, and community awareness.

In addition to content, the planning stage also involved the preparation of the book's technical specifications, which included:

1. Number of pages

The book consists of 36 pages in total, with 20 pages dedicated to 3D pop-up scenes that describe historical sites, and 16 additional pages containing interactive activities such as quizzes, games, and a glossary.

2. Size of the book

The final book size was set to A3 (22,5 x 19 cm) to allow enough space for pop-up elements and illustrations.

3. Type of paper to be used

Art carton 260 gsm was selected for the inner pages and matte laminated to ensure durability and support the pop-up structure, while the cover used a hard cover.

4. Number of interactive objects on each page

Each pop-up spread contains 1-3 interactive elements, such as flaps, fold-outs, or pull tabs, depending on the complexity of the scene and information being conveyed

5. Pop-up technique to be applied

Various pop-up techniques were implemented, including V-folds, layers, and accordion folds, to create depth and dynamic movement, enhancing the three-dimensional experience for young readers.

The next step was layout design and development. At this stage, the researchers, assisted by the illustrator, began to develop the visual concept and structure of the pop-up book more concretely. The design process involves creating preliminary sketches for each page, which include the arrangement of illustrations, pop-up components, educational quizzes, and narrative text. The visual design is conceived with the consideration of aesthetics that are suitable for elementary school-age children. Bright colors and a cartoon illustration style were used to attract

attention and arouse readers' curiosity. Each object or building was designed to resemble its original form so that children could easily understand it. This stage produced a visual draft and complete page structure to serve as the basis for the prototype development stage.

This prototype is a preliminary model that serves as a basis for testing its function, visual attractiveness, and practicality. At this stage, the pop-up elements' movement when the page is opened is observed, as is the functionality of the mechanism. It is also determined whether there are parts that need to be improved to make it more sturdy or easier for children to use.

**a. Material content drafting**

The content material preparation stage is a crucial process in the development of pop-up books, because this content will be the core of the educational message to be conveyed to readers, especially elementary school students. At this stage, the researchers compiled narratives, historical information and other educational elements that were included in the book, based on the results of data collection and references that had been reviewed previously.

The content development process began with identifying the main topic for each page, focusing on four selected historical sites: Lawang Sewu, Sam Poo Kong Temple, Blenduk Church, and Tawang Station. Each site was allocated a two- to three-page segment designed to present key elements, including a brief historical overview, notable facts, and the cultural values associated with the location.

This allocation was purposefully made to provide sufficient space for both textual and visual content. The use of multiple pages ensures that the information can be delivered in an engaging and informative way. Moreover, this structure allows for the integration of pop-up elements, illustrations, and interactive components

without overcrowding the layout, thus supporting clarity, visual appeal, and ease of understanding.

At the end of this stage, a preliminary draft or script of the content was produced. This script would then serve as the foundation for the subsequent layout phase, where the text would be merged with the corresponding visual and interactive elements.

#### **b. Designing Layout**

At this stage, the researchers enlisted the help of an illustrator to create the images and used Adobe Photoshop, CorelDRAW, and Canva. The researchers organized each page based on the order of the story, ensuring that the text, illustrations, and pop-up mechanism would function harmoniously and support each other.

The process begins with creating a rough layout for each page. This sketch includes the placement of key elements, such as images of historical buildings and the location of the narrative text, as well as the parts that will be made into the pop-up structure.



Figure 4. 1 Scheme of Pop-Up Mechanism



Figure 4. 2 Sketch of Companion Character

In addition to designing the book's layout, the researcher developed an animated character that acts as a narrator and an explorer friend. Based on the author's visualizations, this character was designed and realized as cartoon illustrations that are child-friendly and easily recognizable. This character enriches the visual appearance and adds narrative elements that make the story more lively and interesting. With this character, children are invited to actively participate in an adventure with the two main characters as they explore historical sites in Semarang City.



Figure 4. 3 Digital Pop-Up Mechanism

This is an example of a digital layout of the second page of a pop-up book that contains explanations and fun facts about Sam Poo Kong. The design includes a main visual of a temple, narrative text, and accompanying animated elements. The text and images are proportionally placed so as not to interfere with the pop-up mechanism and to remain easily readable by elementary school students, who are the target audience.

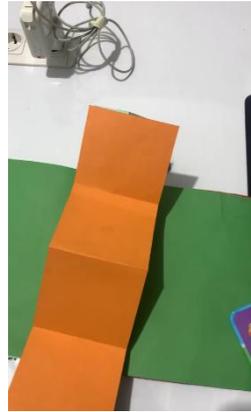


Figure 4. 4 Pop-Up Accordion Mechanism

The researcher used the accordion fold mechanism on one of the pop-up book pages to display additional information vertically. In this book, it is used to present layered information in the fun fact section. It also allows more information to be presented without making the main page look full or congested.



Figure 4. 5 Front and Back Cover Design

The front cover of the book features representative illustrations of the four main icons of Semarang: Lawang Sewu, Sam Poo Kong, Blenduk Church, and Tawang Station. These sites are the main focus of exploration in Semarang Heritage in 3D. The design aims to provide an initial overview of the historical site exploration experience offered by the book and to attract readers' interest with an attractive, child-friendly visual presentation. During the design process, the researcher collaborated with a professional illustrator to create communicative images and further

processed them using CoreDRAW software to digitize and prepare the layout. The back cover was designed with a simpler approach but still contains important information. It includes a brief synopsis of the book's contents, providing an overview of its purpose and benefits as a medium for learning history in a fun way. With informative designs and attractive visuals, both covers introduce exploration and invite children to delve deeper into the stories and knowledge of Semarang City's cultural heritage through a visual, interactive experience.

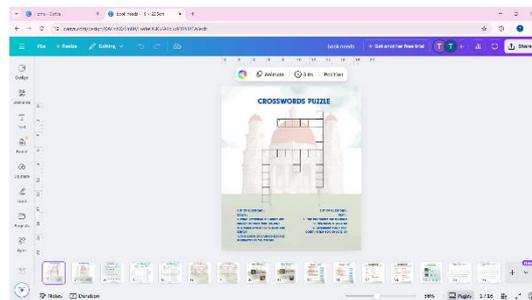


Figure 4. 6 Mini Quizzes Design

As one of the additional interactive elements in this pop-up book, the researcher inserted a mini quiz designed to strengthen children's understanding of the material that has been read previously. The mini quiz is organized in a simple and fun format consisting of a crossword puzzle, riddle puzzle, maze, find words, and guess words. The researchers used Canva to create the mini quiz, which made it easy to design a visual layout of the questions. The quiz is placed at the end of the book as a fun, reflective closing activity. The purpose of the quiz is to engage children in the learning process beyond just reading and observing.

### **4.1.1.3 Developing Preliminary Form of Product**

#### **1. Pop-Up Book Design Formatting**

##### **a. Font Selecting**

In designing the Semarang Heritage 3D pop-up book, the selection of fonts is important for supporting visual appeal while maintaining the book's educational function. The font of choice for the text is Chewy, which exudes a round, soft, and expressive appearance while maintaining a high level of readability. Its casual style makes it suitable for informative and interactive sections, such as quizzes or fun facts, as it can convey messages in a clear and entertaining way to children.

Meanwhile, a custom font designed independently is used for the main title and place name marker on the illustration. This font provides a distinctive visual identity and distinguishes important elements in the book. Despite its unique style, the custom font harmonizes with the book's overall appearance to create a visually consistent and harmonious design.

##### **b. Color Palette Selecting**

The colors chosen for this book are based on visual observation of the original colors of the historical buildings in the book. These buildings include Lawang Sewu, Sam Poo Kong, Blenduk Church and Tawang Station. The main purpose of this color selection is to represent the buildings' visual character, so readers, especially children, can more easily recognize and imagine their original shapes in real life. The chosen colors consist of:

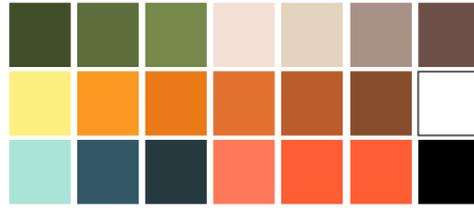


Figure 4. 7 Color Palette Used in the Pop-Up Book

As shown in Figure 4.6 several earth tone colors were chosen such as: shades of brown, orange, red, white, beige, green, navy, olive green, yellow, blue, coral and black.

**c. Language Selecting**

The language used in this pop-up book is light and easy to understand. The language used is not formal or academic, but is organized in such a way as to be easily understood by elementary school students while remaining enjoyable to read. The entire narrative is presented as descriptive information and entertaining facts about the historical buildings discussed in the book.

**d. Main Content**

The primary content of the Semarang Heritage in 3D book is designed to introduce the historical sites in Semarang City through a visual and narrative approach that is accessible and engaging. The book presents historical information in a concise form, complemented by pop-up 3D illustrations and interactive elements such as fun facts and mini quizzes. Each page is meticulously designed to convey a singular, overarching theme, offering an introduction to a historical building of cultural and historical significance. The presentation includes the origins of the building, its main functions

over time, with the aim that children not only recognize the building visually, but also understand its historical context and significance.

#### 4.1.1.4 Preliminary Field Testing

At this stage, researchers conducted an initial trial of the 3D pop-up Semarang Heritage product to obtain input from the lecturer as an expert and users regarding the design, content, and delivery of the material in the book. One of the suggestions received was related to the language used in the book. Some sections were deemed too complex for children to comprehend. Based on this feedback, the researchers simplified the sentences, especially in the historical description section. The narrative was changed to be more easily understood by children, with the aim of making it more accessible and engaging for young readers.

The image shows two pages of a media expert validation form. The left page is the front side, titled "FORM OF VALIDATION OF PRODUCT" for "Creating a Pop-Up Book 'Time Travels: Uncovering Semarang History' for Elementary School Children". It includes the validator's name, "Lili Lamschal Permatasari S.Pd., M.A.", and the date, "1 July 2025". The form asks five questions, each with four response options: "Strongly Disagree", "Disagree", "Agree", and "Strongly Agree". The right page is the back side, featuring a handwritten note in Indonesian: "Sangat baik, bahasa yang digunakan pada buku ini sangat mudah dipahami oleh anak-anak dan sangat menarik untuk dibaca." Below the note is a signature and the name "Lili Lamschal Permatasari S.Pd., M.A.".

Figure 4. 8 Media expert form before validation

**FORM OF VALIDATION OF PROBRICT**  
 Checking a Pop-Up Book "Time Travelers: Uncovering Semarang History"  
 for Elementary School Children

Validator: Lili L. Lantochat Purjanto S.Pd., M.A.  
 Date: June 15<sup>th</sup> 2022

**Material Expert Validation**

Please check/indicate one of the selected answers (✓)

- Is the language used in the narrative easily understood by elementary school students?  
 Strongly Disagree  Disagree  Agree  Strongly Agree
- Are the historical facts educational and interesting?  
 Strongly Disagree  Disagree  Agree  Strongly Agree
- Do additional activities (such as quizzes or reflective exercises) support student understanding?  
 Strongly Disagree  Disagree  Agree  Strongly Agree
- Does the material presented align with the syllabus of Semarang's local history?  
 Strongly Disagree  Disagree  Agree  Strongly Agree
- Is the content appropriate for students in grades 4-5?  
 Strongly Disagree  Disagree  Agree  Strongly Agree

6. Is there more information that needs to be added to this pop-up book? If yes, please explain:  
 "The detailed history of Gunung Sesus needed to be introduced."

7. Criticism and Suggestions:  
 Simplify the language to match the grade of 4. Some words in the text are still too complex, the pictures at the end and glossary are needed to be adjusted.

Validator:  
  
 Lili Lantochat Purjanto S.Pd., M.A.

Figure 4. 9 Media expert form after validation

#### 4.1.1.5 Revising Main Product

Based on the evaluation conducted in the previous stage, the researcher made several revisions to the Semarang Heritage in 3D pop-up book. These revisions were made in response to the validation results and suggestions provided by the supervisor, as well as feedback received during the assessment process. The adjustments included not only visual and structural improvements, but also the simplification of sentences to ensure the content is more understandable and accessible for elementary school children as the target readers.

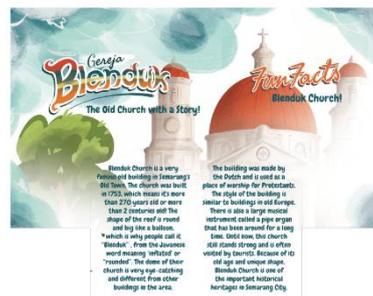


Figure 4. 10 Gereja Blenduk before revision

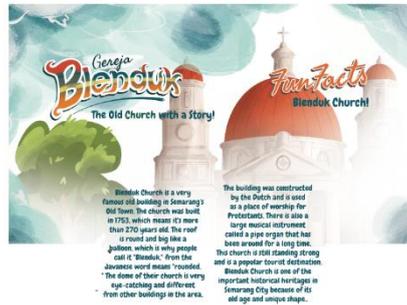


Figure 4. 11 Gereja Blenduk after revision



Figure 4. 12 Sam Poo Kong before revision



Figure 4. 13 Sam Poo Kong After Revision



Figure 4. 14 Font color before revision



Figure 4. 15 Font Color After Revision

The adjustment of visual elements in this book is conducted to create a more attractive, cheerful, and colorful appearance. The use of bright colors and lively illustrations is intended to create a pleasant atmosphere while stimulating the visual interest of children as the main target readers. In addition, adjustments are also made by adding page numbers, which serve to make navigation easier and help readers follow the storyline more systematically. This approach was chosen so that the book not only conveys historical information, but is also able to present a pleasant reading experience and encourage children's curiosity in exploring each page.

#### **4.1.1.6 Operational Field Testing**

At this stage, data was collected from 31 respondents, consisting of a mix of teachers from SDN Grogol Selatan 17 and the parents of the students. Participants were asked to complete a Google Form questionnaire via WhatsApp. The questionnaire was designed to evaluate the quality and feasibility of pop-up books. The evaluation instrument covered three important aspects: book content, visual design, and feasibility as a learning media. The results of the questionnaire were used to assess users' perceptions of the product and determine the acceptability of pop-up books for learning activities. The table below shows the details of the respondents.

Table 4. 1 List of respondents

Institution	Occupation	Grade Level	Number of Respondents
SDN Grogol Selatan 17	English	4-6	3
	Culture	4-6	4
	Indonesian Language	4-6	2
	Non-English and Culture	4-6	7
	Parents of Students	4-6	15

Table 4. 2 Table of respondents interval

Number of Statements	SD	D	A	SA	Total Score	Intervals
1			16	15	108	3.5
2			12	19	112	3.6
3			13	18	111	3.6
4			17	14	107	3.4
5			12	19	112	3.6
6			14	17	110	3.5
7			10	21	113	3.6
8			17	14	107	3.4
9			10	21	114	3.7

10			8	23	116	3.5
11			12	19	112	3.6

Based on an analysis of questionnaires completed by 31 respondents, it can be concluded that the Semarang Heritage 3D pop-up book received an overwhelmingly positive response. According to the 1-4 Likert scale interval used in the evaluation instrument, the majority of respondents rated it in the “Strongly Agree” category. The highest score was obtained in question 9, "Is the pop-up book interactive and does it encourage children's involvement?" The lowest score was recorded for question 4, "Is the content in the book appropriate for elementary school students in grades 4–5?" with an average score of 3.44. This score is still in the "Strongly Agree" category, indicating that, although there is room for improvement, the respondents generally consider the content of the book appropriate.

Based on the feedback from the open-ended questions, there was also a trend towards positive assessments. A number of respondents offered remarks such as "the book is truly engaging" and "it is truly inspiring as learning media. Based on the feedback obtained, it can be concluded that the product met the expected criteria and no further revisions or modifications are needed.

#### **4.1.1.7 Revising Final Product**

After completing the operational field testing stage, the interactive pop-up book successfully passed the evaluation process without requiring any major revisions or adjustments. The evaluation was conducted by involving elementary school teachers as the primary users and educational stakeholders. Their involvement was essential, as teachers play a central role in determining the feasibility and relevance of learning materials in classroom settings.

The quality assessment focused on evaluating the book's content accuracy, visual design, interactivity, and overall functionality as a learning medium. This evaluation process was carried out through a questionnaire distributed via Google Form, which collected feedback from a total of 31 respondents. The responses indicated that the book met users' expectations across all aspects of content quality, visual appeal, and usability in educational contexts.

Furthermore, the assessment included a review of the book's interactive features to ensure they were not only engaging but also durable and safe for use by children. Based on the data collected, the book received highly positive feedback and was considered attractive, educational, and appropriate for its intended audience.

#### **4.1.1.8 Disseminating and Implementing**

At the final stage of development, the Semarang Heritage in 3D pop-up book was officially registered for Intellectual Property Rights (IPR). This step was taken as a form of legal protection for the work developed, as well as to emphasize its originality as an innovative product in the field of education.

After the IPR registration process was completed, the pop-up book was then symbolically handed over to SDN Grogol 17 in Jakarta on June 24, 2025. This handover is part of the real implementation of the product into the elementary school environment, as a form of direct contribution to the world of education.

Through this process, it is hoped that the Semarang Heritage in 3D pop-up book can become one of the interactive, interesting, and contextual alternative learning media, especially in introducing local culture to elementary school students. The book is designed not only to facilitate the teaching and learning process but also to foster a love for Indonesia's cultural heritage from an early age.

## **4.2 Discussion**

The development of the interactive pop-up book *Time Travelers: Uncovering Semarang History* was carried out to address the need for contextual, visual, and engaging learning media in teaching local history to elementary school students. Based on observations and informal interviews with teachers at SDN Grogol Selatan 17, it was found that many students had difficulty understanding history lessons due to their abstract presentation and lack of interactivity. This finding aligns with the statement by Yanto et al. (2023), who emphasized that visual learning media such as pop-up books can enhance students' comprehension of complex concepts.

The final product includes 36 pages: 20 pages of pop-up scenes explaining four significant historical sites in Semarang such as Lawang Sewu, Sam Poo Kong, Blenduk Church, and Semarang Tawang Station and 16 pages containing mini games, crossword puzzles, riddles, and a glossary. These features were designed not only to deliver factual information but also to encourage active participation and critical thinking.

The book was evaluated through a questionnaire distributed via Google Form and WhatsApp to 31 respondents, including teachers from SDN Grogol Selatan 17 and members of the general public. The results showed that the product received highly positive feedback. The aspects of visual presentation and interactivity received the highest score, indicating that these elements were the most appreciated by users. Most respondents agreed that the book was engaging and suitable as a learning medium for children.

This research focused on collecting user feedback to assess the product's reception. The results indicate that the interactive pop-up book has the potential to support learning by making historical content more accessible and enjoyable. The integration of educational content with visual storytelling and playful interaction is a key factor in making the material more memorable and meaningful for students.

Overall, the feedback received supports the idea that learning history does not have to be boring. With the right format and approach such as combining narrative,

visuals, and interaction local historical topics can become more attractive and relevant to young learners.

## **CHAPTER V**

### **CONCLUSION**

#### **5.1 Conclusion**

This research produced a pop-up book entitled Semarang Heritage in 3D: Exploring Historical Sites Through an Interactive Pop-Up Book for Elementary School Children, designed for elementary school students. This book is designed to introduce historical sites in Semarang City with a visual and interactive approach that is fun, educational, and suitable for children. The process of developing this book uses the method of Borg and Gall (1983), which consists of several stages, starting from research and collecting information through documentation, observation, and interviews, followed by the planning stage where researchers begin to design the product concept, including determining the target audience, the number of pages of the book, the ideal size for children, the type of paper that is resistant and suitable for pop-ups, and the number of interactive elements on each page.

In addition, this stage determines the pop-up technique used to create an attractive 3D effect. Furthermore, the preliminary product development stage includes selecting fonts and a color palette based on the visual representation of the original building to maintain a realistic feel while remaining attractive. The narration and language style are adjusted to be light, informative, and easy for children to understand. The next stage is preliminary field testing, in which two aspects are validated: material and visual design. The process continues with revising the main product, making improvements such as simplifying the text, adjusting the colors to make it brighter, and increasing the number of interactive elements. The revised product is then tested on a larger scale through operational field testing.

After making final adjustments in the last stage of product revision, the book was ready for dissemination and implementation, namely distribution to SDN Grogol Selatan 17 Jakarta for use in learning contexts. The results of the testing stage showed that the pop-up book received a very positive response. A

questionnaire was distributed to 31 respondents, and the results showed that the pop-up book was considered effective in conveying historical material in a fun, easy-to-understand, and visually appealing manner. Overall, the book was successfully developed as feasible learning media to support elementary school students' learning of history and culture. It is expected to be an alternative, fun educational media that fosters children's interest and curiosity in cultural heritage and local history.

## **5.2 Suggestion**

Based on the results of the research and development process, there is much potential for further development of this book. One suggestion that can be given is content enrichment through a more fun approach, for example by adding narration in the form of dialog between characters or inserting short stories that are relevant to the historical places raised. Additionally, adding audio elements, such as voice narration, could enhance the reading experience, making it more vivid and immersive. Therefore, further study is needed to explore the development of this medium in more depth as part of efforts to preserve local culture in an educational and interesting way that appeals to the characteristics of today's younger generation.

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# APPENDICES

## Appendix 1 Questionnaire Feedback

### Content Aspect

Apakah penjelasan di dalam buku tersebut sudah cukup jelas untuk dipahami oleh anak-anak?

31 responses



Apakah visual di dalam buku pop-up tersebut sudah cukup interaktif untuk anak-anak?

31 responses



Apakah konten dalam buku tersebut sudah sesuai untuk siswa sekolah dasar kelas 4-5?

31 responses



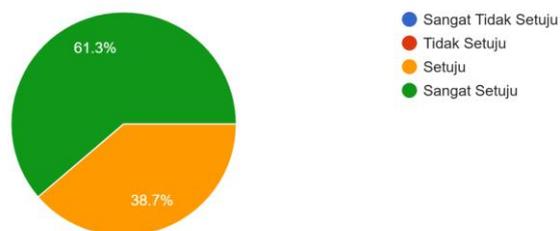
Apakah buku tersebut sudah cukup membantu anak-anak memahami sejarah Kota Semarang?

31 responses



Apakah buku pop-up tersebut pantas digunakan untuk di ruang kelas?

31 responses



Cerita dan penjelasan dalam buku ini mampu membuat anak-anak lebih tertarik mempelajari sejarah.

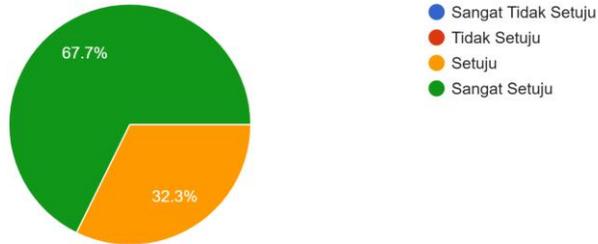
31 responses



## Visual Design Aspect

Apakah visual desain buku Pop-Up tersebut sudah cukup menarik untuk anak-anak?

31 responses



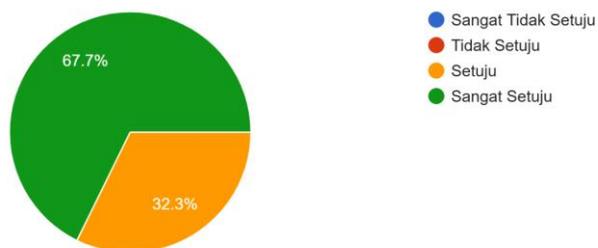
Apakah teks di dalam buku tersebut mudah dipahami oleh anak-anak?

31 responses



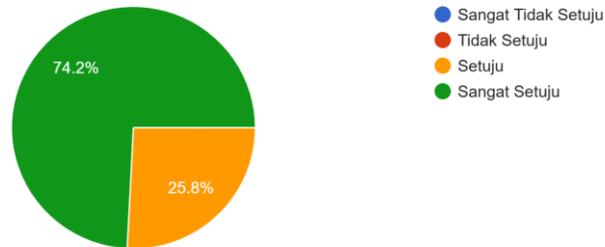
Apakah buku Pop-Up tersebut bersifat interaktif dan mendorong keterlibatan anak-anak?

31 responses



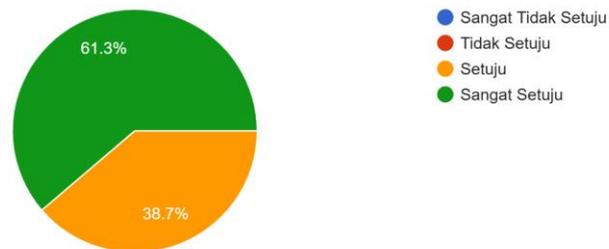
Apakah perpaduan warna di dalam buku tersebut sudah cukup meningkatkan daya tarik anak-anak untuk membaca?

31 responses



Apakah desain animasi buku ini mendukung kenyamanan membaca anak-anak?

31 responses



## Appendix 2 Open-ended Question

Apa manfaat edukatif yang Bapak/Ibu rasakan dari penyajian materi sejarah Semarang melalui quiz interaktif dalam bentuk pop-up book, khususnya untuk siswa sekolah dasar? Bagaimana media ini bisa mendukung capaian pembelajaran?

31 responses

Menurut saya, penyajian materi sejarah Semarang lewat media quiz interaktif dalam bentuk pop-up book sangat membantu dalam proses belajar siswa SD, terutama karena anak-anak di usia tersebut cenderung cepat bosan jika hanya diberi materi berupa teka-teki panjang. Bentuk pop-up yang bisa bergerak atau muncul saat dibuka membuat anak-anak jadi lebih tertarik, karena secara visual mereka merasa lebih "dekat" dengan materi.

Manfaatnya sangat membantu pengetahuan tentang sejarah Semarang, media sangat mendukung Capaian pembelajarannya anak mendapatkan ilmu baru

buku ini sangat mendukung dalam membantu pembelajaran sejarah. Buku ini juga meningkatkan semangat belajar pada anak, rasa ingin tahu, dan juga mempelajari sejarah lebih dalam

bukunya bagus bisa menambah wawasan karena disajikan dg cara yg menarik.

Bisa mendukung pembelajaran siswa bagi yang ingin mengimplementasikan program 2 bahasa.

Saya rasa penyajian materi sejarah Semarang melalui quiz interaktif dalam bentuk pop-up book sangat membantu siswa sekolah dasar karena membuat pembelajaran jadi lebih menarik dan mudah dipahami. Anak-anak jadi tertarik membaca dan senang belajar sejarah karena tampilannya visual dan bisa dinikmati

Setelah melihat quiz di dalam buku tersebut yang menyajikan permainan seperti riddle, tebak kata, labirin, dan teka-teki silang seputar sejarah tempat ikonik di Semarang (Lawang Sewu, Gereja Blenduk, Sam Poo Kong, dan Stasiun Semarang Tawang), bagaimana pendapat Bapak/Ibu tentang penggunaan media ini sebagai alat bantu pembelajaran sejarah lokal di kelas?

31 responses

ini salah satu cara yang kreatif untuk mengajarkan sejarah lokal ke anak-anak SD. Karena belajarnya lewat permainan, bukan cuma baca buku biasa aja, jadi anak-anak lebih terhibat

Menurut saya, penggunaan media ini cukup bagus dan kreatif untuk pembelajaran sejarah lokal, khususnya untuk anak-anak SD. Permainan seperti riddle, tebak kata, labirin, sampai teka-teki silang memang cocok untuk usia mereka, karena bisa membuat proses belajar jadi seru, menantang, dan tidak membosankan.

Menarik sekali dan sangat variatif

Sudah cukup baik, anak-anak sudah dapat mengerti

ini bagus dan kreatif, bisa jadi inspirasi untuk para guru penggunaan media seperti pop-up book ini dalam pembelajaran dalam kelas

Sangat membantu mengasah otak anak

Sangat bermanfaat karena mereka dapat mengetahui permainan tradisional karena era nya sekarang sudah gadget

Menurut Anda, apakah desain visual dalam buku ini mampu membangkitkan rasa semangat ingin tahu anak? Jelaskan alasan Anda.

31 responses

menurut saya iya, karena warna-warna yang ada di buku cukup colorful dengan narasi yang cukup mudah untuk dipahami jadi menarik perhatian anak-anak

Menurut saya, desain visual dalam buku ini sangat mampu membangkitkan rasa semangat ingin tahu anak.

Benar.dengan didesain semenarik mungkin pembelajaran yg disampaikan mampu membangkitkan rasa semangat dan rasa ingin tahu anak lebih tinggi

iya, karena desainnya menarik dan penuh warna, jadi buat anak lebih semangat belajar dan tidak cepat bosan

Ya, visual dalam buku ini dapat membantu semangat ingin tahu anak karena penetapan warna dan pemilihan desain sudah baik dan saya rasa akan cocok untuk anak-anak.

iya, karena desain yang ditampilkan merepresentasikan dari bentuk bangunan aslinya, jadi menambah rasa ingin tahu anak-anak lebih meningkat

Setelah melihat isi buku ini, bagaimana pendapat Bapak/Ibu tentang topik dan tempat-tempat yang ditampilkan?

31 responses

topiknya menarik dan tempat-tempat yang ditampilkan punya sejarah yang menarik untuk dibahas, jadi pas untuk bahan belajar

Menurut saya, topik dan tempat-tempat yang ditampilkan di buku ini cukup tepat dan menarik untuk anak-anak SD. Tempat-tempat seperti Lawang Sewu, Gereja Blenduk, Sam Poo Kong, dan Stasiun Semarang Tawang memang ikon kota Semarang yang penuh sejarah dan punya cerita unik di baliknya.

Menambah ketertarikan untuk bisa mengunjungi lokasi yang dibahas

Sudah cukup menarik, desain yang disajikan mampu membuat anak-anak termotivasi

topiknya pas, buku ini bisa jadi jembatan buat ngenalin sejarah lokal ke anak-anak SD

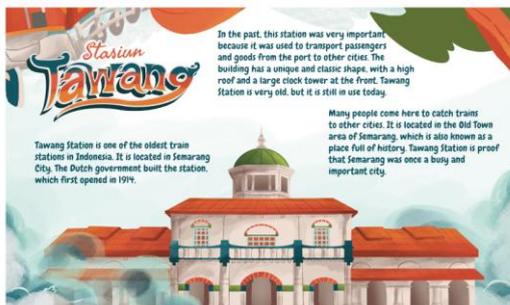
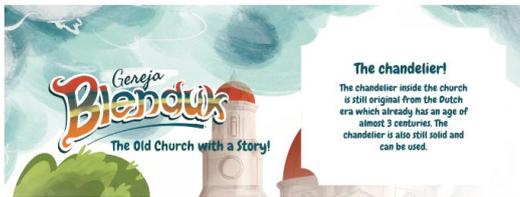
Sangat menginspirasi

Sudah bagus, jelas dan sesuai dengan topik

topik yang dipilih sudah sangat baik dan sangat mudah dipahami oleh anak-anak karena pilihan gaya

## Appendix 3 Screenshot of the Final Product





## Appendix 4 table of respondents interval result

Table 4. 1 List of respondents

Institution	Occupation	Grade Level	Number of Respondents
SDN Grogol Selatan 17	English	4-6	3
	Culture	4-6	4
	Indonesian Language	4-6	2
	Non-English and Culture	4-6	7
	Parents of Students	4-6	15

Number of Statements	SD	D	A	SA	Total Score	Intervals
1			16	15	108	3.5
2			12	19	112	3.6
3			13	18	111	3.6
4			17	14	107	3.4
5			12	19	112	3.6
6			14	17	110	3.5
7			10	21	113	3.6
8			17	14	107	3.4
9			10	21	114	3.7
10			8	23	116	3.5
11			12	19	112	3.6

## Appendix 5 Documentation



## Appendix 6 Turnitin result

ORIGINALITY REPORT			
8%	6%	4%	2%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS
PRIMARY SOURCES			
1	Irfandi husein Kamil, Heny Setyawati, Harry Pramono, Rumini Rumini. "Development of a web-based athletic sports learning model in sports talent schools", Retos, 2025 Publication		1%
2	repo-dosen.ulm.ac.id Internet Source		<1%
3	eprints.untirta.ac.id Internet Source		<1%
4	staffnew.uny.ac.id Internet Source		<1%
5	Submitted to Universitas Sanata Dharma Student Paper		<1%
6	www.gssrr.org Internet Source		<1%
7	Submitted to University of Bath Student Paper		<1%
8	digilib.unila.ac.id Internet Source		<1%
9	eprints2.undip.ac.id Internet Source		<1%

## Appendix 7 Semi-structured interview

No.	Interview Question
1.	What is your opinion on the importance of teaching elementary school children about history and culture?
2.	Have you ever used learning media (such as interactive books or pop-up books) or visual aids in learning? If so, what was the response?
3.	Do children find it easier to understand material when it is presented in visual form or interactive media? Can you give an example?
4.	What are some of the challenges that typically come up when teaching cultural materials to students?
5.	What is the solution to this challenge?
6.	We are planning to develop an interactive book to be used as a learning medium for elementary school students. May we ask for your feedback on this initiative?
7.	In your opinion, do children often feel bored when studying, especially when it comes to history or culture? Why do you think this happens?
8.	In your opinion, how much influence does engaging learning media have on students' enthusiasm for learning in the classroom? Could you share your experiences?
9.	For example, if there were learning materials for history that could be seen, touched, and even played with, such as pop-up books, do you think that would help in the learning process?

No	Source	Question	Answer
1.	M.J (Teacher 1)	Q1	In my opinion, it is very important to introduce history and culture from an early age. That way, children can develop a deep love for their country from a young age. This also serves as the foundation for shaping their character in the future.
		Q2	At our school, we often use visual learning media, one of which is interactive videos. This type of media is very helpful in conveying material, especially that related to culture.
		Q3	Every student has different memory abilities. If you only rely on visual media without any interactive elements, learning will not be maximized. Students need media that can directly involve them in the learning process.
		Q4  Q5	One challenge in the learning process is the lack of interactive media. Most of the media used until now has been visual only, which means children are less actively involved in the learning process.

			<p>One solution is to explain the essence of history or culture first. That way, not only will teachers have a better understanding, but children will also be able to comprehend and understand the events being studied.</p>
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		Q6	In the context of learning media, media development is very much needed, especially when it comes to information or visuals that are quite complex. Children need visual aids that can help them understand the material more easily. Therefore, interactive pop-up books will be a new innovation worth trying.
		Q7	Yes, children get bored very easily, especially when they are just listening to the teacher. They need something that can keep them focused and interested.
		Q8	Yes, it has a huge impact. If the learning media is interesting, children become enthusiastic about learning. They are immediately attracted and their eyes focus on the media brought by the teacher.
		Q9	It was very helpful! The thing is, children prefer things they can hold in their hands rather than just look at.
2.	W.I (Teacher 2)	Q1	I agree with Mr. M.J, especially because introducing local culture can shape positive values in children. When combined with appropriate learning, local culture can truly become part of their daily lives.

		Q2	When teaching about cultural heritage in 5th grade, we use a variety of methods, such as books with 3D objects. The children seem very enthusiastic about following the lesson.
		Q3	I have seen that when teachers bring in visual aids such as pictures or sketches, children become very enthusiastic. They even want to join in drawing and coloring. Activities like this can strengthen their memory of the material being studied.
		Q4	There are also teachers who are not very knowledgeable about Indonesian history or culture, which affects how they deliver the material. The teachers' understanding is also important for conveying the material properly.
		Q5	The lesson material should be summarized in an essential manner, then presented in an interesting learning media format using presentations or videos. That way, the material will be more interesting, accessible, and easier for children to understand.
		Q6	Actually, the material is quite good. But if it is presented through more interesting learning media, it will certainly be a solution when teaching culture and history.

			Children will also not get bored quickly. Therefore, with the development of pop-ups, it is hoped that this can be a new innovation for learning media.
		Q7	Especially if the material is about history or culture. It seems heavy and uninteresting to children, so they are not very enthusiastic about it.
		Q8	Especially if the teacher brings in something they can touch or pictures that are interesting, the children immediately become curious. They want to know more.
		Q9	They enjoy it even more if the media has a playful element to it. It feels like they are playing instead of studying.
3.	I.M (Teacher 3)	Q1	The challenges of today are quite challenging, especially since children are already very familiar with gadgets. For example, when opening YouTube, they are more interested in foreign entertainment content. This can cause them to forget our own local culture if they are not introduced to it from an early age.
		Q2	Some of the cultures or places featured in the book were

			unfamiliar to some students. But after they saw and studied these objects, they became familiar with them and gained new knowledge that was imprinted in their memories.
		Q3	In my opinion, the most effective learning media is interactive media. This is because when children can touch, see, and interact directly with the media, they receive immediate feedback. This makes learning more meaningful for them.
		Q4	It's difficult to explain cultural topics using the current media. There are few media outlets that can explain culture in an interesting and easy way for children to understand.
		Q5	Students can also be given the task of making clippings or searching for information themselves. When they are directly involved and find out for themselves, they will find it easier to remember information about culture and history.
		Q6	As teachers, we strongly support the development of learning media such as this type of book. Not only is it beneficial for students, but it also greatly assists the teaching and learning process at school.

		Q7	The media is still pretty basic, nothing that really makes them curious or want to get involved. So it's understandable that they get bored quickly when learning.
		Q8	The impact is definitely significant, making the classroom atmosphere more lively. Unlike usual, where students tend to be sleepy, they are now active and more enthusiastic because they are truly involved.
		Q9	Students find it easier to remember things when they learn through play, and they don't get bored quickly. They also become more active and enthusiastic.

## Appendix 8 Intellectual Property Rights Certificate

  
REPUBLIK INDONESIA  
KEMENTERIAN HUKUM

### SURAT PENCATATAN CIPTAAN

Dalam rangka perlindungan ciptaan di bidang ilmu pengetahuan, seni dan sastra berdasarkan Undang-Undang Nomor 28 Tahun 2014 tentang Hak Cipta, dengan ini menerangkan:

Nomor dan tanggal permohonan	: ECO02025068253, 17 Juni 2025
<b>Pencipta</b>	
Nama	: Tazkia Aulia Rahma, Griselda Ayu Zhafira dkk
Alamat	: Villa Mutiara Serpong, Blok E5 No. 5, Jl. Mawar V, Rt.06/12, Pd. Jagung Timur, Tangerang Selatan, Serpong Utara, Kota Tangerang Selatan, Banten, 15236
Kewarganegaraan	: Indonesia
<b>Pemegang Hak Cipta</b>	
Nama	: Tazkia Aulia Rahma, Griselda Ayu Zhafira dkk
Alamat	: Villa Mutiara Serpong, Blok E5 No.5, Jl. Mawar V, Rt.06/12, Pd. Jagung Timur, Tangerang Selatan, Serpong Utara, Kota Tangerang Selatan, Banten
Kewarganegaraan	: Indonesia
Jenis Ciptaan	: Buku
Judul Ciptaan	: <b>TIME TRAVELERS: UNCOVERING SEMARANG HISTORY</b>
Tanggal dan tempat diumumkan untuk pertama kali di wilayah Indonesia atau di luar wilayah Indonesia	: 17 Juni 2025, di Kota Semarang
Jangka waktu perlindungan	: Berlaku selama hidup Pencipta dan terus berlangsung selama 70 (tujuh puluh) tahun setelah Pencipta meninggal dunia, terhitung mulai tanggal 1 Januari tahun berikutnya.
Nomor Pencatatan	: 000908514

adalah benar berdasarkan keterangan yang diberikan oleh Pemohon.  
Surat Pencatatan Hak Cipta atau produk Hak terkait ini sesuai dengan Pasal 72 Undang-Undang Nomor 28 Tahun 2014 tentang Hak Cipta.

a.n. MENTERI HUKUM  
DIREKTUR JENDERAL KEKAYAAN INTELEKTUAL  
u.b  
Direktur Hak Cipta dan Desain Industri

Agung Damarsasongko,SH.,MH.  
NIP. 196912261994031001





**Dislaimer:**

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