

## **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 The History teacher was chosen to assess the relevance and accuracy of historical content presented in the book, ensuring it aligns with learning objectives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.

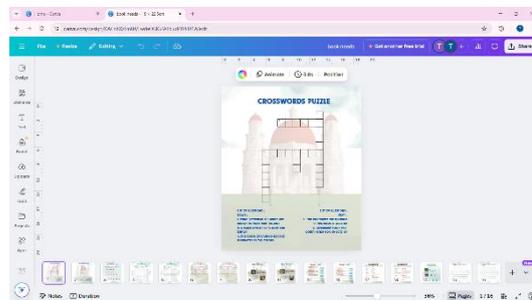


Figure 4. 6 Mini Quizzes Design

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:

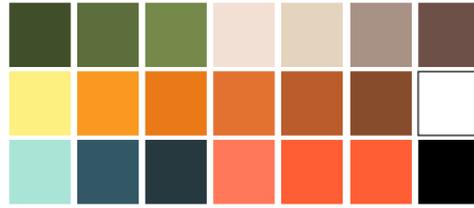


Figure 4. 7 Color Palette Used in the Pop-Up Book

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 printed form, and the right page shows handwritten feedback and a signature.

**FORM OF VALIDATION OF PRODUCT**  
 Creating a Pop-Up Book "Time Travels: Uncovering Semarang History"  
 for Elementary School Children

Validator: Lili Lamschal Purbaningrum S.Pd., M.A.  
 Date: 1 July 2025

**Media Expert Validation**

Please check the one of the relevant answers (s):

- Does the page layout in the pop-up book is well-organized and visually appealing?  
 Strongly Disagree  Disagree  Agree  Strongly Agree
- Does the pop-up book's use including its font, size, and spacing provide an easy and clear reading experience for readers?  
 Strongly Disagree  Disagree  Agree  Strongly Agree
- The Pop-Up book elements work well and improve interactivity in learning?  
 Strongly Disagree  Disagree  Agree  Strongly Agree
- Is the composition between text and images proper level and not distracting?  
 Strongly Disagree  Disagree  Agree  Strongly Agree
- Does the cover represent the content and identity of the product well?  
 Strongly Disagree  Disagree  Agree  Strongly Agree

**6. Critiques and Suggestions**

Sebaiknya jika bahasa di bagian di page 14-6 bisa di simplifikasi agar lebih mudah untuk dipahami karena bahasa yang digunakan di bagian tersebut itu terlalu sulit untuk dipahami.

Validator:  
 Lili Lamschal Purbaningrum 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-Lili Laniachet Purjanto S.Pd., M.A.  
 Date: June 15<sup>th</sup> 2022

**Material Expert Validation**

Please check/initial 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 Sewu 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-Lili Laniachet 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.

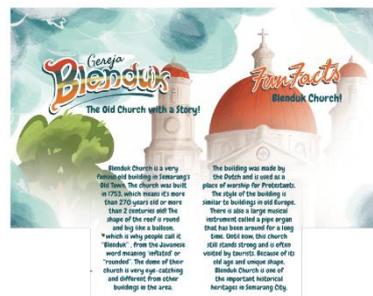


Figure 4. 10 Gereja Blenduk before revision



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.