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# Design and Development of 'Si Ebon': A Cirebon Cultural Encyclopedia for Local Culture Revitalization in Early Childhood Education

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## Abstract

Based on preliminary needs analysis, the availability of learning media that introduce local cultural knowledge to early childhood, particularly in the form of cultural encyclopedias, remains limited. As a result, children's exposure to local cultural knowledge in formal learning environments is still relatively low, especially regarding Cirebon culture. This study aims to design, develop, and evaluate "Si Ebon," a digital Cirebon cultural encyclopedia intended as a learning medium to support the revitalization of local culture in early childhood education (ECE). The study employed a development research approach using the ADDIE model, which includes analysis, design, development, implementation, and evaluation stages. The product was validated by media experts, subject matter experts, and cultural experts to ensure the appropriateness of the content, design, and cultural representation. The implementation involved teachers and early childhood students from several ECE institutions in Cirebon. Data were collected through questionnaires and observations and analyzed using descriptive quantitative techniques to determine the feasibility and effectiveness of the product. The results indicate that the "Si Ebon" digital encyclopedia is highly feasible and effective as a culturally responsive learning medium. Its use enhances children's understanding of various elements of Cirebon culture, including local history, traditional arts, culinary heritage, traditions, and historical sites. This study contributes to the development of digital-based cultural learning media and highlights the potential of integrating local cultural content into early childhood education as a strategy for cultural revitalization.

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## Introduction

The transmission of cultural knowledge to younger generations has become a growing concern in many societies, particularly in the context of rapid globalization and digital transformation. Previous studies have shown that the increasing dominance of global popular culture in digital media environments often influences children's cultural preferences and reduces their exposure to local cultural traditions (Briliany et al., 2023; Matayev et al., 2024; Setyaningrum, 2017). This phenomenon has been widely discussed in international educational and cultural studies, which emphasize that without systematic efforts in education, local cultural heritage may gradually lose relevance among younger generations. The younger generation, who should be the successors of cultural heritage, are more interested in global popular culture, which is more dominant in the digital space (Anggreni et al., 2025; Hidayat & Maesyaroh, 2020). If this continues, local culture will be further eroded, providing a great opportunity for foreign cultures to dominate the cultural space of local communities (Syahira Azima et al., 2021). This phenomenon is not only related to declining interest but also has the potential to eradicate philosophical values, traditions, and cultural practices that have been passed down from generation to generation, as well as erode nationalism and thinking about local culture (A. Siregar et al., 2024).

Scholars argue that cultural transmission cannot rely solely on community traditions or informal practices, but should also be integrated into formal education systems (Rijkiyani et al.,

2022). In particular, early childhood education plays a crucial role in introducing cultural values, symbols, and practices, as this developmental stage represents a critical period for identity formation and social learning. Cultural education at an early age not only promotes cultural awareness but also strengthens children's sense of belonging and appreciation for their cultural heritage (Hasanah et al., 2025). Within the framework of culturally responsive pedagogy, integrating local cultural knowledge into learning activities is considered an effective strategy for fostering both character development and cultural identity among young learners.

In the Indonesian context, the integration of local culture into education has been encouraged through various policies, including culture-based character education and the implementation of the Pancasila Student Profile Strengthening Project (P5). These initiatives emphasize the importance of contextual learning that reflects local cultural values and traditions (Sari & Malik, 2024). However, several studies indicate that the implementation of culture-based learning in early childhood education remains limited due to insufficient learning resources, lack of appropriate media, and teachers' limited access to structured cultural learning materials (Anhar et al., 2024).

This issue is also evident in the Cirebon region, which is historically known for its rich cultural heritage, including traditional arts such as Sintren, Rudat Dance, Jaran Lumping, Wayang Beber, and various forms of traditional theater. Despite the cultural richness of the region, several studies report a decline in public participation and interest in traditional arts, particularly among younger generations (Ashri, 2023; Rosidin & Aah Syafa'ah, 2016). Some traditional performances are now rarely staged, while cultural practices such as local rituals and traditional crafts receive limited attention from children and young audiences. These changes indicate potential challenges in sustaining local cultural heritage if cultural knowledge is not systematically introduced through educational institutions.

Preliminary needs analysis conducted by the researchers involving 25 early childhood education teachers from 13 schools in Cirebon revealed similar challenges in the educational context. Although teachers reported introducing certain aspects of Cirebon culture in their classrooms, the scope of cultural materials was still limited. Cultural learning activities generally focused on visible cultural elements such as Cirebon dance, batik, traditional foods, regional language, and tourist attractions. Meanwhile, other cultural aspects such as historical sites, traditional rituals, performing arts, and local technological heritage were rarely introduced. Furthermore, most teachers reported that cultural learning activities were conducted only occasionally due to several constraints, including limited learning media (72.7%), classroom management challenges, children's low engagement, and insufficient teacher knowledge regarding local cultural resources (Purnamasari & Wahyudi, 2025).

These findings indicate the need for innovative learning media that can support teachers in introducing local cultural knowledge in ways that are engaging and developmentally appropriate for young children. In the digital era, the use of interactive learning media has been widely recognized as an effective strategy to facilitate children's learning experiences, which is through digital encyclopedias (Maula et al., 2021). Encyclopedias are reference sources that present text and image-based information in print and digital formats (Safitri, 2019). The digital encyclopedia developed in this study is named "Si Ebon" as an effort to revitalize Cirebon culture, especially for early childhood. This is also in line with the policy of strengthening culture-based character education, as stipulated in Permendikbud Number 20 of 2018 (Muhammad Sulhan, 2018).

Based on this need, this study develops a digital cultural encyclopedia called "Si Ebon", designed to introduce various aspects of Cirebon culture to young children. The encyclopedia includes cultural content such as the history of Cirebon, traditional arts, handicrafts, customs and rituals, local culinary traditions, historical sites, and cultural tourism destinations. The visual and interactive design of the encyclopedia is adapted to the developmental characteristics of early childhood learners to ensure accessibility and engagement. Therefore, the development of the "Si Ebon" digital encyclopedia is expected not only to provide an innovative learning

medium but also to contribute to efforts aimed at revitalizing local culture through early childhood education

## Methods

This study employed a research and development (R&D) approach to design and evaluate a digital learning medium aimed at introducing local cultural knowledge to early childhood learners. The development process followed the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation), which is widely used in instructional design research due to its systematic structure for developing and refining educational products. The ADDIE framework was selected because it enables iterative development through needs analysis, product design, expert validation, classroom implementation, and evaluation. This structure allowed the researchers to ensure that the digital encyclopedia was pedagogically appropriate, culturally relevant, and suitable for early childhood learning contexts. The selection of the ADDIE model was based on the characteristics of the research, which aimed to produce an educational product in the form of the “Si Ebon” Digital Encyclopedia and to test its feasibility and effectiveness in teaching local culture to early childhood students. This research was conducted in two early childhood education institutions, namely TK Siber Syekh Nurjati Cirebon and TK Khalifah Al Qolam Cirebon. These institutions were selected because they represent educational settings where the integration of local culture into early childhood learning is considered relevant and meaningful.

The participants involved 38 children aged 5–6 years and 10 early childhood teachers. The children participated in the classroom implementation of the digital encyclopedia, while the teachers provided feedback on the usability and relevance of the learning media during instructional activities.

Participants were selected using purposive sampling, considering their involvement in early childhood classrooms where cultural learning activities were already integrated into the curriculum. This sampling approach allowed the researchers to evaluate the developed media within an authentic educational context. The five stages of the ADDIE model, consisting of analyze, design, development, implementation, and evaluation, can be seen in the diagram below:



Figure 1. ADDIE Development Model Stages

## Analysis

The analysis phase aimed to identify learning needs related to the introduction of local cultural knowledge in early childhood education. Data was collected through teacher questionnaires to understand existing teaching practices, challenges in introducing cultural materials, and the availability of digital learning resources. The initial analysis revealed the need for child-friendly digital learning media that present local cultural content through visual and interactive formats.

Various materials, including history, food, musical instruments, and batik, should be incorporated into the encyclopedia.

### Design

Based on the needs analysis, the design phase focused on developing a conceptual framework for the digital encyclopedia. This phase included the preparation of cultural learning content related to Cirebon traditions and cultural elements, storyboard and interface layout for the digital platform, and visual illustrations and simplified textual explanations appropriate for early learners. The design emphasized visual clarity, simple navigation, and contextual cultural representation to ensure that the learning media aligned with children's developmental characteristics.

### Development

During the development phase, a digital encyclopedia prototype was produced, integrating visual cultural illustrations, descriptive text, and interactive navigation features. The prototype was then evaluated through expert validation to ensure the quality and relevance of the developed media. Three categories of experts participated in the validation process:

Tabel 1. Experts Judgment

|  |                             |
|--|-----------------------------|
| <b>Early childhood education experts</b> | Content experts             |
| <b>Educational technology expert</b>     | Design experts              |
| <b>Cultural experts</b>                  | Cirebon's cultural heritage |

Each expert validated the product using a validation instrument that covered aspects of content accuracy, pedagogical suitability, media design, and cultural relevance. Revisions were made based on feedback from the validators before the product was implemented in classroom learning.

### Implementation

At this stage, the researchers conducted product trials to evaluate both the effectiveness of the developed media and user responses. The implementation was carried out in two early childhood education institutions and involved 38 children aged 5–6 years and 10 early childhood teachers. The effectiveness of the digital encyclopedia was assessed using a pretest–posttest observational approach. Before the learning activities began, children's initial understanding of local cultural elements was observed and recorded using an observation sheet (pretest). After the implementation of the digital encyclopedia in classroom learning, a second observation (posttest) was conducted to identify changes in children's ability to recognize and understand the presented cultural content. In addition, teachers' responses were collected to evaluate the usability and instructional relevance of the developed media.

### Evaluation

The evaluation stage analyzed the feasibility and effectiveness of the developed digital encyclopedia based on data collected during expert validation and product implementation. The data consisted of expert validation results, teacher response questionnaires, and observational data from children's learning activities. Expert validation sheets were completed by content experts, media experts, and cultural experts to assess the appropriateness of the "Si Ebon" Digital Encyclopedia in terms of content, media design, and cultural relevance. Teacher responses were collected through questionnaires to evaluate the usability of the media in classroom learning, while observational data were used to identify changes in children's recognition of local cultural elements during the learning process. Quantitative data were analyzed using descriptive percentage analysis to determine the feasibility level of the product, while qualitative feedback from experts and teachers was analyzed descriptively to support product refinement.

## Data Analysis Techniques

### Product Feasibility Test

The product development process began with determining the level of product feasibility, which was then tested. The evaluation indicators were adapted from established frameworks for educational media evaluation and instructional design identified (Arsyad, 2017; Dick, W., Carey, L., & Carey, 2001). The following are the formulas and feasibility criteria used in this study

$$P = \frac{f}{n} \times 100\%$$

Explanation:

p = percentage of children with specific developmental criteria

f = frequency/number of children who meet specific developmental criteria

n = total number of children

Table 2. Feasibility Test Grid

| Validator             | Category   |
|-----------------------|--|
| Subject Matter Expert | <ul style="list-style-type: none"> <li>• Content suitability</li> <li>• Accuracy and currency of material</li> <li>• Language</li> <li>• Presentation of material</li> <li>• Educational value and character</li> </ul>  |
| Media Expert          | <ul style="list-style-type: none"> <li>• Design appearance</li> <li>• Typography and text</li> <li>• Media quality</li> <li>• Interactivity and child engagement</li> <li>• Content suitability for children's characteristics</li> <li>• Creativity and innovation</li> </ul> |
| Cultural Expert       | <ul style="list-style-type: none"> <li>• Cultural authenticity</li> <li>• Cultural relevance</li> <li>• Cultural richness and completeness</li> <li>• Presentation of material</li> <li>• Cultural educational value</li> </ul>  |

Tabel 3. Eligibility Test Criteria

| Interval | Kategori        |
|----------|-----------------|
| 0 – 20   | very unsuitable |
| 21 – 40  | unsuitable      |
| 41 – 60  | less suitable   |
| 61 – 80  | suitable        |
| 81 – 100 | very suitable   |

From the table above, a product is considered acceptable if it falls within the minimum value category of **61-100%**.

### Product Effectiveness Test

Once declared acceptable, a effectiveness test is conducted, in which the product is tested on children aged 4-6 years.

Table 4. Effectiveness Criteria

| Criteria        | Effectiveness Level | Percentage (%) |
|-----------------|---------------------|----------------|
| Does not appear | Ineffective         | 1-50           |
| Appears         | Effective           | 51-100         |

Table 5. indicators of children's understanding of Cirebon culture

| No | Indicator                           |
|----|-------------------------------------|
| 1  | Knowledge of the history of Cirebon |

| No | Indicator                         |
|----|-----------------------------------|
| 2  | Knowledge of Cirebon Topeng Dance |
| 3  | Knowledge of Cirebon Arts         |
| 4  | Knowledge of Cirebon Batik        |
| 5  | Knowledge of Cirebon Specialties  |
| 6  | Knowledge of Cirebon Tourism      |

The effectiveness criteria are as follows: The product is declared effective if it is within the percentage range of 51-100%.

## Result

This study aims to develop a learning media product in the form of a digital encyclopedia of Cirebon culture, using the ADDIE (Analyze, Design, Development, Implementation, Evaluation) approach model. The results of the study are described as follows:

## Analysis

A needs analysis was conducted as the first step for researchers to determine the extent of user needs in learning about Cirebon culture, as well as the obstacles and limitations faced by teachers in delivering it. This was done by distributing questionnaires using the Google Forms platform. The questionnaires were distributed in schools in the Cirebon area, and 24 respondents filled out the questionnaires. Based on the questionnaire results, all schools have implemented Cirebon cultural learning. The types of culture taught include:

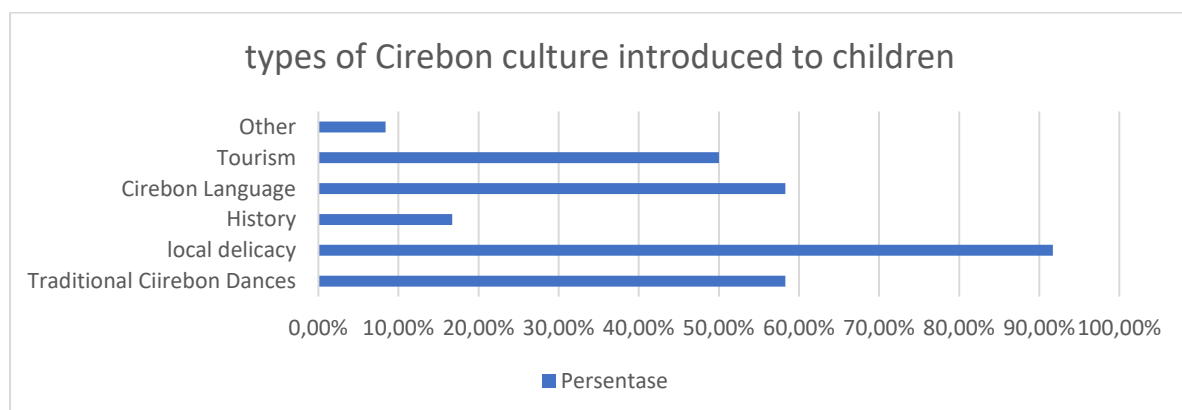


Figure 2. Types of culture taught in schools

Figure 2 shows that most respondents have taught Cirebon culture to early childhood students, with the most frequently taught materials being Cirebon food (91.7%), Cirebon dance and language (58.2%), and Cirebon tourism (50%). Meanwhile, material related to Cirebon history is rarely taught, with a percentage of 16.7%. Furthermore, to explore information about the obstacles teachers face in introducing Cirebon culture, the researcher also conducted interviews. The obstacles faced by teachers include the difficulty of controlling children, children who are not interested, and limited learning media. Teachers explained the need for learning media that can meet the needs of introducing Cirebon culture.

“There is a lack of media related to certain cultural elements such as history, so there is a need for media that can be used to make it easier for teachers and make children more interested in learning about Cirebon culture” (*Respondent 1*)


Based on the results of field research, there is a need for learning media that can be used to assist in the process of learning about Cirebon culture. The product developed in this study is a Digital Encyclopedia of Cirebon Culture entitled “Si Ebon”.

*Desain*

The next stage is to plan the product creation, determine the outline by gathering information related to the cultural values to be included in the encyclopedia. The cultural values included are: history, dance, arts, traditional ceremonies, food, and historical sites.

In the next stage, researchers look for content in line with the cultural values that have been determined. In addition, at this stage, researchers also create character designs and a variety of illustrations that are in line with the content created and tailored to the characteristics of early childhood. The designs are created using various platforms such as Canva and Animaker.

Table 5. Draft of “Si Ebon”

| Page | Image Description   | Narrative  |
|------|---|--|
| 1    |  <p data-bbox="564 1279 746 1314">Image of ebon</p> | <p data-bbox="922 792 1193 824">Pengenalan Tokoh Si Ebon</p> <p data-bbox="922 824 1388 936">Halo, teman-teman!<br/>Namaku Ebon, Aku adalah si udang kecil dari Cirebon. Senang sekali bisa bertemu denganmu!</p> <p data-bbox="922 936 1388 1048">Namaku Si Ebon 🦞. Aku seekor udang kecil yang tinggal di laut Cirebon. Badanku mungil, tapi aku punya semangat besar untuk bercerita!</p> <p data-bbox="922 1048 1388 1137">Teman-teman mau tahu rahasia budaya Cirebon yang seru? 🤔</p> <p data-bbox="922 1137 1388 1285">Ayo kita cari tahu bersama!<br/>Aku akan mengajakmu berkenalan dengan budaya Cirebon yang indah dan penuh warna. Di sini kita akan belajar tentang sejarah, tarian, musik, makanan, cerita rakyat, sampai tempat-tempat unik di Cirebon.</p> <p data-bbox="922 1317 1388 1375">Siapkah kalian ikut petualangan budaya bersama Si Ebon? 🗨️</p> <p data-bbox="922 1375 1388 1433">Kalau siap, katakan bersama-sama: “Ayo, Si Ebon!”</p> <p data-bbox="922 1464 1005 1496">English:</p> <p data-bbox="922 1496 1388 1585">Hello, friends!<br/>My name is Ebon. I am a little shrimp from Cirebon. I am very happy to meet you!</p> <p data-bbox="922 1585 1388 1733">My name is Si Ebon 🦞. I am a small shrimp who lives in the sea of Cirebon. My body may be tiny, but I have a big spirit for storytelling! Would you like to discover the exciting secrets of Cirebon’s culture? 🤔</p> <p data-bbox="922 1733 1388 1877">Come on, let’s explore them together!<br/>I will take you on a journey to get to know the beautiful and colorful culture of Cirebon. Here, we will learn about history, dance, music, food, folklore, and unique places in Cirebon.</p> <p data-bbox="922 1877 1388 1935">Are you ready to join this cultural adventure with Si Ebon? 🗨️</p> <p data-bbox="922 1935 1388 1993">If you are ready, say it together: “Let’s go, Si Ebon!”</p> |

**Development**

Products that have passed the design stage are then compiled into an A4-sized digital encyclopedia using the Canva application. The following is an overview of the digital product:

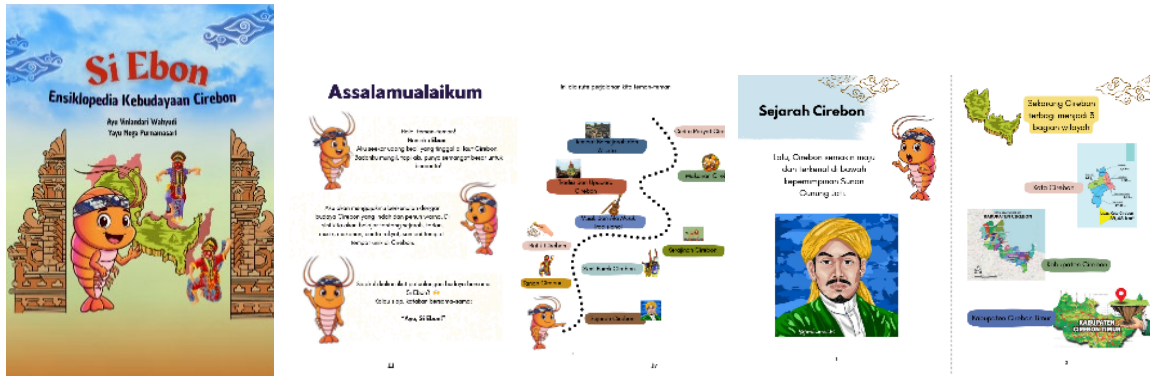


Figure 3. Display of "Si Ebon"



Figure 4. Play Activities

The products created using the Canva application were then converted into flipbooks using the Hyzine Flipbook application. The following are the products in flipbook form:

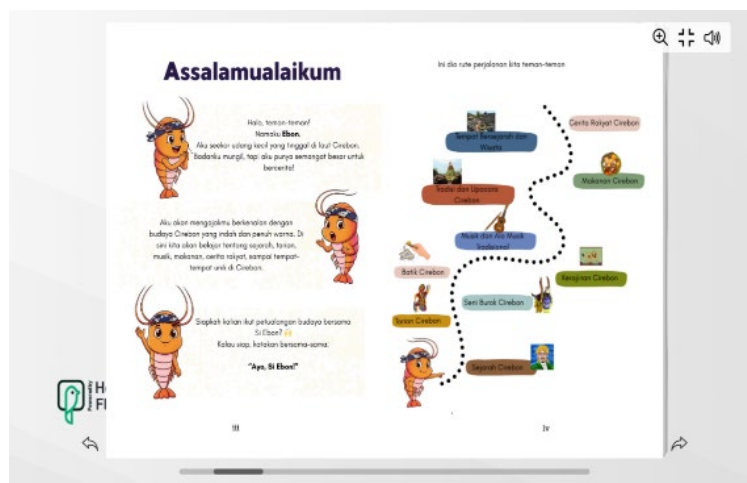


Figure 5. Digital Encyclopedia

<https://heyzine.com/flip-book/b9e03195e2.html>

The next step is feasibility testing, where the product is validated by media experts, subject matter experts, and cultural experts. The results of the validation test can be seen in Table 6.

Table 6. Validation Test Results

| Validation             | Mean | Persentase | Category        |
|------------------------|------|------------|-----------------|
| <b>Media Expert</b>    |      |            |                 |
| Stage 1                | 3.87 | 77.5%      | Suitable        |
| Stage 2                | 4.75 | 95%        | Very suitable   |
| <b>Content Expert</b>  |      |            |                 |
| Stage 1                | 3    | 60%        | Fairly Adequate |
| Stage 2                | 4    | 91%        | Very Adequate   |
| <b>Cultural Expert</b> |      |            |                 |
| Stage 1                | 3,37 | 67%        | Suitable        |
| Stage 2                | 4,9  | 98%        | Very suitable   |

Based on the feasibility test results by media experts in stage 1, a percentage of 77.5% was obtained with a category of feasible. Furthermore, the percentage value obtained from the material experts was 60% with a category of fairly feasible, and the cultural experts in stage 1 obtained a result of 67% with a category of feasible. The experts provided suggestions and input on the encyclopedia product, including the following:

Table 7. Expert input and suggestions

| Expert                | Input and Suggestions   |
|-----------------------|---|
| Media Expert          | <ol style="list-style-type: none"> <li>1. It is necessary to pay attention to the illustrations in the sections on the history and tourism of Cirebon so that they are suitable for young children.</li> <li>2. Consider using activities in the form of digital games so that children can play them.</li> <li>3. In the chapter on Cirebon dance, it would be better if the pictures and text explaining the topeng were larger. The names of the topeng are not legible even when zoomed in.</li> <li>4. Each page of the book should not have too much text. For example, on page 1 about the history of Cirebon, one page could be dedicated to an image of Prince Cakrabuana with an explanation below. Thus, page 1 could be expanded to two pages. This would make the text more readable for children and more engaging with larger images.</li> </ol> |
| Subject Matter Expert | <ol style="list-style-type: none"> <li>1. Add Cirebon specialties such as Docang and Nasi Lengko.</li> <li>2. Arrange tourist attractions according to the historical order of their establishment.</li> <li>3. Modify worksheets so they can be used in digital and printed formats.</li> </ol>  |
| Cultural Expert       | <ol style="list-style-type: none"> <li>1. Photos and images should be more specific and reflect early childhood.</li> <li>2. Add gamelan elements to Cirebon art.</li> <li>3. History Culture adds other figures involved.</li> </ol>   |

The product was then revised based on input from experts and underwent a second stage of feasibility testing. The results of the second stage of feasibility testing by media experts obtained a percentage of 95% with a category of very feasible, while material experts obtained a percentage of 91% with a category of very feasible, and cultural experts obtained a percentage of 98% with a category of very feasible.

### Implementation

The product, which had obtained a highly feasible result, was then tested on users, namely 17 teachers, to see their response. The results of the teacher response test can be seen in the following table.

Tabel 8. Teacher Respons

| Indicators  | N  | 5            | 4            | 3           | 2         | 1         |
|---|----|--------------|--------------|-------------|-----------|-----------|
| Appropriateness of material to media objectives (revitalization of local culture) |    | 47,1         | 52,9         | 0           |           |           |
| Appropriateness of material to early childhood development competencies           |    | 41,2         | 52,9         | 0           |           |           |
| Accuracy of material content to Cirebon cultural values                           |    | 47,1         | 52,9         | 5,8         |           |           |
| Completeness of information presented in the encyclopedia                         |    | 58,8         | 41,2         | 0           |           |           |
| Accuracy of cultural facts and data presented                                     |    | 58,8         | 41,2         | 0           |           |           |
| Relevant and up-to-date material in line with current cultural conditions         |    | 41,2         | 58,8         | 0           |           |           |
| Simple, clear language appropriate for children                                   |    | 47,1         | 47,1         | 0           |           |           |
| Accurate and easy-to-understand use of cultural terms                             |    | 70,6         | 29,4         | 5,8         |           |           |
| Material presented in a systematic and coherent manner                            | 17 | 52,9         | 47,1         | 0           |           |           |
| Presentation is interesting and able to arouse children's curiosity               |    | 52,9         | 47,1         | 0           |           |           |
| Balance between text and illustrations in explaining the content                  |    | 47,1         | 52,9         | 0           |           |           |
| Media can make it easier for teachers to convey material related to local culture |    | 76,5         | 23,5         | 0           |           |           |
| The material presented can instill positive moral, social, and cultural values    |    | 70,6         | 29,4         | 0           |           |           |
| The material can encourage children's appreciation of local culture               |    | 52,9         | 47,1         | 0           |           |           |
| The material can develop children's insight into cultural diversity               |    | 47,1         | 52,9         |             |           |           |
| <b>Average</b>  |    | <b>54,1%</b> | <b>45,1%</b> | <b>0,7%</b> | <b>0%</b> | <b>0%</b> |

The data analysis presented uses a 1-5 Likert scale, namely 5) very feasible, 4) feasible, 3) quite feasible, 2) not feasible, 1) very not feasible. Based on the table above, it can be seen that the results of the teacher response test obtained 54.1% in the very feasible category, 41.1% feasible, and 0.7% quite feasible. These findings indicate that the "Si Ebon" digital encyclopedia is suitable for use as a medium for revitalizing Cirebon culture among early childhood.

After undergoing user response testing, the product's effectiveness was then tested on early childhood at two institutions, namely the Siber Syekh Nurjati Cirebon Kindergarten and the Khalifah Al Qolam Kindergarten, involving 38 children. The results of the trial can be seen in Table 4 and 5.

Table 9. Product Trial Results

| No | INDICATOR                          | Before       |              | After        |              |
|----|------------------------------------|--------------|--------------|--------------|--------------|
|    |                                    | A            | NA           | A            | NA           |
| 1  | Learn about the history of Cirebon | 5            | 33           | 30           | 8            |
| 2  | Learn about Cirebon Topeng Dance   | 13           | 25           | 35           | 3            |
| 3  | Learn about Cirebon Arts           | 24           | 14           | 29           | 9            |
| 4  | Learn about Cirebon Batik          | 10           | 28           | 33           | 5            |
| 5  | Learn about Cirebon Specialties    | 26           | 12           | 38           | 0            |
| 6  | Learn about Cirebon Tourism        | 28           | 10           | 38           | 0            |
|    | <b>Average</b>                     | <b>17.66</b> | <b>20.33</b> | <b>33.83</b> | <b>4.16</b>  |
|    | <b>Percentage</b>                  | <b>46.4%</b> | <b>53.5%</b> | <b>89.0%</b> | <b>10.9%</b> |

A trial was conducted on children aged 4-6 years using a pretest-posttest scheme to measure early childhood knowledge of Cirebon culture. The pretest results showed that the average score of children who were familiar with Cirebon culture was 17.66, with a percentage of 46% of children, while children who were not familiar with it had a higher average score of

20.33, with a percentage of 53.5%. This data shows that on average, children are not familiar with the culture. Based on the indicators tested, the lowest cultural scores were for Cirebon history with a score of 5, Cirebon batik with a score of 10, mask dance with a score of 13, and Cirebon arts with a score of 24. while the cultural aspects that many children knew included Cirebon arts with a score of 24 and Cirebon tourism with a score of 28.

Next, the researcher conducted treatment by providing material through cultural introduction with the Si Ebon Encyclopedia. The material was provided gradually and consistently for one month. Next, the researcher conducted a post-test related to the children's ability to recognize Cirebon culture. Based on the post-test results, it can be seen that the children's average score increased to 33.8 with a percentage of 89%. Items such as history increased to 30, topeng dance to 35, arts to 29, batik to 33, special foods to 38, and Cirebon tourism to 38. In this case, it can be concluded that the Si Ebon Encyclopedia is effective for introducing the cultural diversity of Cirebon to children aged 4-6 years.

### Evaluation

Some feedback from teachers was related to the use of language, which needs to be adjusted for early childhood. Sentences should not be too long, so that they are easy for young children to understand.

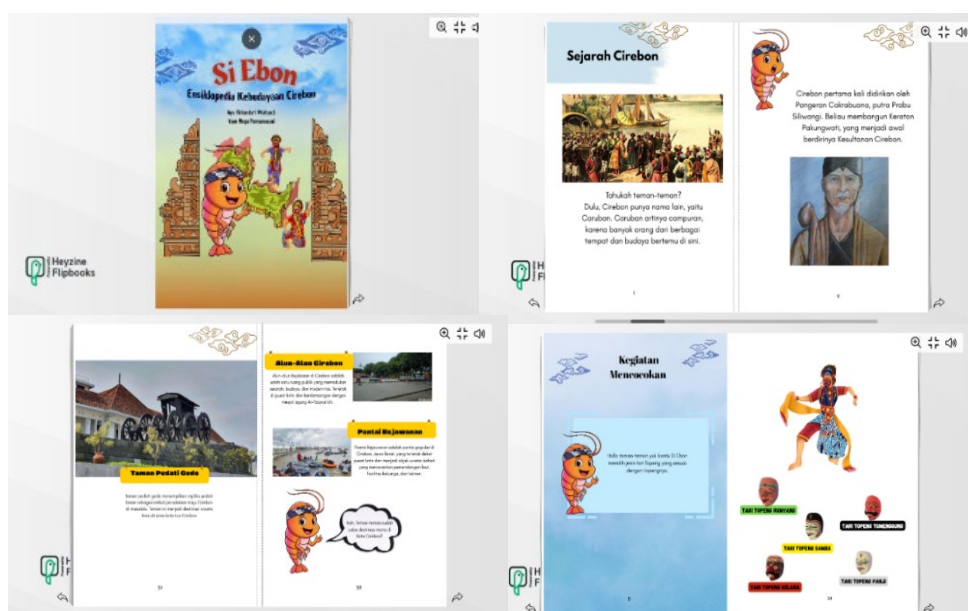


Figure 5. Final Product of the Si Ebon Encyclopedia

Based on the effectiveness test results, further improvements were made to the “Si Ebon” digital encyclopedia product. In terms of language, the researchers improved the sentences to make them easier for children to understand. Furthermore, in some parts of the images, the researchers made adjustments to suit the characteristics of early childhood. The final product can be seen in Figure 4 and the following link: <https://heyzine.com/flip-book/b9e03195e2.html>.

### Discussion

The findings show that the “Si Ebon” digital encyclopedia was not merely acceptable as a classroom aid, but functioned as an effective pedagogical bridge between cultural content and early childhood learning processes. This point is visible in the strong validation results from media, content, and cultural experts, the positive teacher responses, and the marked increase in children's recognition of Cirebon culture after the implementation stage. Such a pattern suggests that the educational value of the product does not rest only on its digital format, but

on the way digital design was combined with culturally meaningful material for young learners. In this sense, the study extends the discussion on digital learning environments by showing that effectiveness in early childhood settings depends on the alignment between medium, content, and developmental appropriateness rather than on technological novelty alone (Mahardika et al., 2025; Shonfeld et al., 2021; Trianingsih & Untung Nopriansyah, 2025). The children's positive responses during classroom use indicate that visual representation, contextual cultural themes, and guided interactivity can work together to support engagement and understanding in culture-oriented learning.

These findings can be read productively through the lens of meaningful learning, especially because the cultural content introduced in the encyclopedia was closely connected to the children's everyday sociocultural world. Meaningful learning emerges when new knowledge is linked to prior experience and existing cognitive structures rather than presented as detached information to be memorized (Bryce & Blown, 2023). In early childhood contexts, such linkage is especially important because young children grasp concepts more easily when they are embedded in familiar symbols, routines, and environments (Rofi'ah et al., 2025; Taylor & Leung, 2020). The encyclopedia's inclusion of Cirebon cultural elements such as culinary traditions, batik, tourism, arts, and local symbols provided concrete entry points through which children could anchor new knowledge. What matters here is not only exposure to culture, but the transformation of culture into accessible learning experience, so that children encounter local heritage as something intelligible and near to their lives rather than distant or ceremonial knowledge alone (Diputera et al., 2024).

The study also demonstrates that the pedagogical strength of the product lies in the material form of the encyclopedia itself. Visual design reduced the abstraction of cultural knowledge by turning symbolic or unfamiliar concepts into concrete images that were easier for children to identify and recall. This is especially relevant in early childhood education, where comprehension is strongly mediated by perceptual clarity, repetition, and the possibility of guided exploration. The interactive structure of the digital encyclopedia enabled children to move through content in a more exploratory manner, which resonates with active learning principles and supports curiosity-driven engagement (Papavlasopoulou et al., 2019). In that respect, the results reinforce the view that child-centered digital media can enhance attention and participation when the interface, navigation, and representational choices are developmentally attuned and educationally purposeful (Diputera et al., 2024; Nurdiana, 2023).

The contribution of this study also exceeds the now-familiar claim that digital media simply makes learning more interesting. Previous research has shown that digital media may strengthen motivation and support conceptual understanding in early childhood education, especially through visual and interactive presentation modes (Isnaini et al., 2018; Purnamasari & Wuryandani, 2019). Yet much of that literature treats technology primarily as an instructional enhancer, with limited attention to what kinds of knowledge are being mediated and why that matters pedagogically. The present findings add a different layer by showing that digital media can also carry the work of cultural transmission, not only academic instruction, when local knowledge is deliberately organized into child-friendly formats (Jadidah et al., 2023; Oktavianingsih et al., 2023). This shifts the discussion from technology as delivery mechanism to technology as a cultural-pedagogical medium that can participate in the preservation, reinterpretation, and circulation of local heritage among younger generations.

This point is significant for the academic discussion on culturally responsive pedagogy in early childhood education. The study indicates that local culture-based digital media can function as a meeting point between digital literacy and cultural education without reducing either one to a decorative curricular add-on. The encyclopedia approach worked because the digitization process was selective, visual, and contextual, allowing cultural material to remain intelligible for children rather than being overloaded with historical or ethnographic detail beyond their developmental reach. In this regard, the study contributes to current scholarship by showing that local culture can be translated into pedagogically usable forms through simple

but carefully structured digital design, rather than through technologically sophisticated platforms alone (Ivanka et al., 2025). The academic value of the study therefore lies not only in producing a validated product, but in offering an applied conceptual direction for how digital learning media can support cultural revitalization in early childhood settings.

The practical implications are equally substantial. For teachers, the findings suggest that digital cultural media can help address a recurring classroom problem, namely the gap between the expectation to introduce local culture and the limited availability of accessible teaching resources. For schools and curriculum developers, the results indicate that culture-based learning does not need to remain confined to occasional celebrations or isolated thematic activities, but can be integrated into routine learning through structured digital resources. This matters because local culture often enters early childhood classrooms in fragmented ways, whereas the encyclopedia format offers a more systematic and reusable learning source. The study also supports the broader argument that culturally responsive digital media can enrich classroom practice while remaining compatible with children's contemporary literacy environments (Kumpulainen et al., 2020; Tzima et al., 2020). What emerges here is a practical model in which digital technology does not displace local culture, but helps reorganize it into forms that are more teachable, engaging, and accessible for young children.

Even so, the findings should be interpreted with care. The implementation was conducted on a limited scale and in a relatively specific educational context, so the results cannot be generalized too quickly across the diversity of early childhood institutions. The study also took place within settings where technological access and institutional readiness may differ from those in less resourced schools, which means that the success of the media cannot be separated from the material conditions of implementation. In addition, the duration of the intervention was still too short to determine whether the observed gains in cultural recognition would persist over time or develop into deeper forms of cultural literacy and identification. These limitations matter because the effectiveness of digital cultural media may depend not only on product quality, but also on repetition, teacher mediation, and the continuity of exposure across school and home contexts.

These limitations indicate several directions for further research while also clarifying the scope of the present findings. Future studies need to test similar media across different regional cultures, institutional settings, and resource conditions in order to examine whether this model remains effective beyond the context studied here. Further development may also move beyond encyclopedic presentation by incorporating richer interactive elements, such as games, storytelling pathways, or child-led exploration tasks, while longitudinal designs are needed to assess whether repeated use contributes to cultural literacy, cultural memory, and cultural identity over time. Within these boundaries, the "Si Ebon" encyclopedia suggests that culturally grounded digital media may serve as a pedagogical resource that connects early learning with local cultural knowledge, especially when the design is aligned with children's developmental characteristics and supported by teacher mediation. The study therefore does not claim that digital media alone can sustain cultural continuity, but it does indicate that such media can become one practical pathway for making local culture more present, more organized, and more learnable in early childhood education.

## Conclusion

This study indicates that integrating local cultural content into a digital learning medium can support early childhood learning in a way that is pedagogically grounded and contextually relevant. The findings show that the "Si Ebon" digital encyclopedia was judged feasible by expert validators, received positively by teachers, and was associated with increased recognition of several elements of Cirebon culture during classroom implementation. These results do not suggest that digital format alone determines educational value. What appears more decisive is the alignment between visual design, developmental appropriateness, teacher use, and the cultural familiarity of the content presented to children. Within these limits, the

study suggests that culture-based digital media may serve as one practical way of making local cultural knowledge more accessible in everyday early childhood learning.

The broader significance of the study lies in its contribution to ongoing discussions on digital pedagogy, culturally responsive education, and the place of local knowledge in contemporary childhood settings. Rather than treating technology only as a tool for increasing engagement, the study shows that digital media may also function as a structured pedagogical space for introducing culturally situated content in a form that young children can recognize and discuss. This contribution is relevant beyond the Indonesian context because many education systems are facing similar tensions between digital expansion and the weakening transmission of local cultural knowledge. At the same time, the findings remain bounded by the limited setting and duration of the study, so broader claims about cultural continuity or long-term impact cannot yet be made. Further research across different regions, institutional conditions, and longer time frames is needed to assess whether similar media can support not only short-term recognition but also more sustained forms of cultural literacy in early childhood education.

### **Declarations**

#### **Author Contribution Statement**

Ayu Vinlandari Wahyudi: Conceptualization, Methodology, Investigation, Data curation, Formal analysis, Writing – original draft. Yayu Mega Purnamasari: Supervision, Validation, Methodology, Writing – review & editing, Project administration. Fatihatul Hikmah: Investigation, Resources, Data curation, Visualization, Writing – review & editing.

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#### **Data Availability Statement**

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

#### **Declaration of Interests Statement**

The authors declare no competing interests.

#### **Additional Information**

No additional information is available for this paper.

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