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DESIGNING A COLLABORATIVE MULTILINGUAL DIGITAL STORYBOOK FOR INTERCULTURAL LEARNING THROUGH INDONESIAN AND JAPANESE FOLKTALES

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Abstrak

Di era globalisasi, literasi, kompetensi interkultural, dan kemampuan berkomunikasi dalam berbagai bahasa menjadi kompetensi penting bagi peserta didik pada abad ke-21. Namun, sumber belajar yang mengintegrasikan multilingualisme, multimodalitas, dan pendidikan interkultural masih terbatas. Penelitian ini bertujuan untuk merancang dan mengembangkan buku cerita digital kolaboratif multi bahasa berbasis cerita rakyat Indonesia dan Jepang sebagai media pendukung pembelajaran interkultural bagi pembelajar bahasa Indonesia asal Jepang. Penelitian ini menggunakan pendekatan Design and Development Research (DDR) dengan model ADDIE yang meliputi tahap analisis, desain, pengembangan, implementasi, dan evaluasi. Produk yang dihasilkan berupa buku cerita digital interaktif berjudul *Indonesia-Japan Folktales: Timun Mas & Momotaro*, yang disajikan dalam tiga bahasa, yaitu Bahasa Indonesia, Bahasa Inggris, dan Bahasa Jepang, serta dilengkapi dengan ilustrasi, narasi audio, dan fitur flip book interaktif. Produk diimplementasikan kepada delapan mahasiswa tingkat menengah Program Bahasa Indonesia di Kanda University of International Studies, Jepang. Data kualitatif dikumpulkan melalui observasi kelas, diskusi terarah, tanggapan tertulis mahasiswa, dan umpan balik reflektif, kemudian dianalisis menggunakan analisis tematik. Hasil penelitian menunjukkan empat tema utama. Pertama, mahasiswa memandang bahwa fitur multimodal membantu pemahaman isi cerita dan meningkatkan keterlibatan dalam membaca. Kedua, perbandingan cerita rakyat Indonesia dan Jepang mendorong refleksi interkultural serta diskusi mengenai nilai-nilai budaya yang dimiliki kedua negara. Ketiga, tantangan linguistik, terutama kosakata yang belum dikenal dan kalimat yang relatif panjang, menunjukkan perlunya dukungan pembelajaran tambahan, seperti glosarium dan panduan pelafalan. Keempat, mahasiswa memberikan berbagai rekomendasi untuk penyempurnaan produk, terutama pada aspek navigasi dan fitur interaktif. Temuan ini menunjukkan bahwa buku cerita digital multi bahasa berbasis multimodal memiliki potensi yang kuat sebagai media pembelajaran yang mendukung dialog interkultural, literasi multibahasa, dan keterlibatan peserta didik dalam pembelajaran bahasa asing.

Kata kunci: buku cerita digital, penelitian dan pengembangan, kompetensi interkultural, multimodalitas, multibahasa, literasi budaya.

Abstract

In the era of globalization, literacy, intercultural competence, and multilingual communication have become essential competencies for learners in the twenty-first century. Despite these demands, learning resources that integrate multilingualism, multimodality, and intercultural education remain limited. This study aimed to design and develop a collaborative multilingual digital storybook based on Indonesian and Japanese folktales to support intercultural learning among Japanese learners of Indonesian. The study employed a Design and Development Research (DDR) approach using the ADDIE model, consisting of analysis, design, development, implementation, and evaluation. The resulting product was an interactive digital storybook entitled *Indonesia-Japan Folktales: Timun Mas & Momotaro*, presented in Indonesian, English, and Japanese and enriched with illustrations, audio narration, and interactive flipbook features. The product was implemented with eight intermediate-level Indonesian language students from Kanda University of International Studies, Japan. Qualitative data were collected through classroom observation, guided discussion, students' written responses, and reflective feedback, and analyzed using thematic analysis. The findings revealed four major themes. First, students perceived the multimodal features as facilitating story comprehension and increasing reading engagement. Second, the comparison of Indonesian and Japanese folktales encouraged intercultural reflection and discussion of shared cultural values. Third, linguistic challenges, particularly unfamiliar vocabulary and lengthy sentences, highlighted the need for additional learning support such as glossaries and pronunciation guidance. Finally, students provided constructive recommendations for improving navigation and interactive features. These findings suggest that multilingual multimodal digital storybooks have strong potential as learning resources that support intercultural dialogue, multilingual literacy, and learner engagement in foreign language education.

Keywords: digital storybook, research and development, intercultural competence, multimodality, multilingual, cultural literacy.

1. Introduction

Education plays an important role in promoting human and societal development by strengthening human capital and preparing learners to address the challenges of an increasingly interconnected world. The Sustainable Development Goals (SDGs), particularly Goal 4 emphasize inclusive and quality education that fosters not only literacy and numeracy but also critical thinking, intercultural understanding, and other twenty-first-century competencies (Global Education Monitoring Report, 2024). Likewise, SDG 17 highlights the importance of global partnerships through cross-national collaboration and knowledge exchange (Leal Filho et al., 2022). These global agendas underscore the need for innovative educational practices that integrate multilingual learning, intercultural dialogue, and digital technologies.

In language education, intercultural competence has become a central learning objective. According to Byram (2012), intercultural competence encompasses openness toward cultural diversity, knowledge of cultural practices, skills of interpretation and interaction, and critical cultural awareness. Similarly, multilingual education has been recognized as an effective means of developing these competencies because learning multiple languages exposes learners to different cultural perspectives and ways of meaning-making (García & Wei,

2018). Kramersch (2006) further argues that multilingualism is closely connected to learners' identities and intercultural positioning, suggesting that language learning extends beyond linguistic proficiency to include the ability to negotiate meaning across cultures.

Digital storytelling has increasingly been adopted as a pedagogical approach that combines multilingual learning with technology-enhanced instruction. Previous studies have demonstrated that digital storytelling promotes learners' engagement, creativity, and reflective learning by integrating textual, visual, and auditory modes (Robin, 2008; Sadik, 2008). From a multimodal perspective, meaning is constructed through the interaction of multiple semiotic resources rather than through language alone (Kress & van Leeuwen, 2006; Jewitt, 2009). Likewise, the Cognitive Theory of Multimedia Learning explains that the integration of verbal and visual information facilitates comprehension and cognitive processing when instructional materials are appropriately designed (Mayer, 2014). These studies collectively suggest that multimodal digital resources have potential to support language learning and intercultural understanding.

Folktales also provide authentic cultural resources because they embody moral values, collective identities, and social traditions passed down through generations. Indonesian and Japanese folktales, for example, share universal themes such as courage, cooperation, and resilience while simultaneously reflecting distinctive cultural perspectives. Recent studies have explored digital storytelling in literacy education (Kusumarasdyati, 2021), multimodal learning environments (Olvah et al., 2024), Japanese cultural learning through digital media (Sakai & Tomita, 2023), and multilingual education through translanguaging (Garcia & Wei, 2018). However, these studies have generally examined these aspects separately. Few studies have integrated multilingual storytelling, multimodal digital design, intercultural learning, and cross-national collaboration within a single educational product. Moreover, limited attention has been given to the use of comparative Indonesian and Japanese folktales as a shared intercultural learning resource for foreign language learners.

This gap indicates the need for a learning resource that simultaneously combines multilingualism, multimodality, intercultural pedagogy, and international collaboration into an integrated instructional design. Rather than examining the effectiveness of an existing instructional intervention, this study focuses on the design, development, and qualitative evaluation of such a learning resource.

Therefore, this study aims to develop a collaborative multilingual digital storybook based on the Indonesian folktale *Timun Mas* dan and the Japanese folktale *Momotaro*. Developed through a collaboration between Universitas Negeri Jakarta and Kanda University

of International Studies, the digital storybook integrates Indonesian, Japanese, and English, together with illustrations, audio narration, and interactive digital features. The study contributes to the growing body of research on multilingual digital storytelling by providing a design and development model and qualitative evidence of learners' experiences, perceptions, and intercultural reflections during its implementation.

2. Literature Review

2.1. Digital Storytelling in Language and Literacy Education

Digital storytelling has gained increasing attention as an innovative pedagogical approach in language and literacy education because it combines narrative learning with digital technology. Previous studies consistently report that digital storytelling promotes learner engagement, reading motivation, creativity, and reflective learning by integrating textual, visual, and auditory resources (Robin 2008; Sadik, 2008). More recently, Chen and Yeh (2024) demonstrated that collaborative digital storytelling creates opportunities for learners to co-construct narratives, strengthen writing performance, and enhance creativity through collaborative interaction in technology-enhanced learning environments. These findings suggest that digital storytelling extends beyond digital reading activities by fostering active participation, collaboration, and meaning-making. Consequently, digital storytelling has become a promising pedagogical approach for supporting learner-centered language learning while encouraging both linguistic and creative development.

2.2. Multimodality and Multimedia Learning

The educational value of digital storybooks can be explained through multimodality and multimedia learning theories. According to Kress and van Leeuwen (2006), meaning is constructed through the interaction of multiple semiotic resources, including language, images, colour, sound, and movement. Similarly, Jewitt (2009) argues that multimodal learning environments allow learners to interpret meaning using complementary modes rather than relying exclusively on written text. This perspective is further supported by Mayer's (2014) Cognitive Theory of Multimedia Learning, which proposes that learning becomes more effective when verbal and visual information are presented simultaneously because learners process information through interconnected verbal and visual cognitive channels. Collectively, these theoretical perspectives suggest that integrating illustrations, narration, and interactive features into digital storybooks can facilitate comprehension while reducing cognitive demands during language learning.

2.3. Intercultural Competence in Multilingual Learning

Intercultural competence has become one of the primary objectives of contemporary language education. Byram's (2012) Intercultural Communicative Competence (ICC) framework emphasizes that successful intercultural communication requires not only linguistic knowledge but also attitudes of openness, interpretative skills, interaction skills, and critical cultural awareness. In multilingual contexts, Garcia and Wei (2018) argue that learners continuously negotiate meaning across languages through translanguaging practices, enabling them to develop broader cultural perspectives alongside linguistic competence. These perspectives suggest that multilingual learning environments provide opportunities for learners to compare cultures, recognize different worldviews, and develop intercultural sensitivity.

2.4. Previous Studies and Research Gap

Previous research has explored various dimensions of digital storytelling, multilingual learning, and intercultural education. Kusumarasdyati (2021) demonstrated that digital storybooks integrating Indonesian local culture can enhance literacy learning, although the study focused primarily on monolingual instructions; materials. Similarly, Sakai and Tomita (2023) examined the integration of Japanese cultural values into digital learning environments but did not incorporate multilingual storytelling or comparative intercultural narratives. Garcia and Wei (2018) showed that collaborative digital storytelling supports creativity and language development through collaborative writing activities.

Taken together, these studies demonstrate the educational potential of digital storytelling, multimodal learning, multilingual pedagogy, and intercultural education. However, they have largely investigated these dimensions independently. Limited research has integrated multilingual storytelling, multimodal digital design, comparative Indonesian and Japanese folktales, and international collaboration into a single educational resource aimed at supporting intercultural learning. Furthermore, previous studies have predominantly emphasized learning outcomes such as literacy, writing performance, or creativity, whereas fewer studies have focused on the systematic design and qualitative evaluation of multilingual digital storybooks as intercultural learning resources.

To address these gaps, the present study adopts a Design and Development Research (DDR) approach by Richey & Klein (2007) to develop a collaborative multilingual digital storybook integrating Indonesian, Japanese, and English. The study contributes a

systematically designed educational product together with a qualitative evaluation of learners' experience perception, and intercultural reflection during its implementation.

3. Research Method

The study employed a Design and Development Research (DDR) approach, which aims to systematically design, develop, and evaluate educational products to improve instructional practices (Richey and Klein, 2007). The development process was guided by the ADDIE instructional design model, consisting of five stages: Analysis, Design, Development, Implementation, and Evaluation (Hendratno, 2023). Rather than measuring instructional effectiveness through experimental procedures, this study focused on the systematic development of multilingual digital storybooks and the qualitative evaluation of learners' experiences during its implementation.

3.1. Analysis

The analysis stage aimed to identify the instructional needs and learner characteristics that informed the development of the digital storybook. A review of literature on multilingual education, intercultural competence, multimodal learning, and digital storytelling was conducted alongside observations of Indonesian language learning for Japanese students. The analysis focused on identifying learners' needs, linguistic challenges, and the potential role of multimodal digital media in supporting intercultural language learning.

3.2. Design

Based on the results of the analysis, the design stage involved planning the overall structure of the digital storybook. This included selecting the Indonesian folktale Timun Mas and the Japanese folktale Momotaro, preparing multilingual versions in Indonesian, English, and Japanese, designing the storyboard, creating visual illustrations, planning audio narration, and determining the interactive flipbook features. The instructional design was intended to encourage learner engagement while facilitating intercultural reflection through multimodal learning experience.

3.3. Development

During the development stage, the digital storybook was produced by integrating textual, visual, and audio components into an interactive flipbook. Illustrations were created using IbisPaint X, page layouts and multilingual texts were developed using Canva, and the completed product was published through the Heyzine Flipbook platform. Audio narration was incorporated to support pronunciation and listening comprehension. The multilingual content was collaboratively reviewed by researchers from Universitas Negeri Jakarta and Kanda University of International Studies to ensure linguistic accuracy and cultural appropriateness.

3.4. Implementation

The digital storybook was implemented with eight intermediate-level Japanese students enrolled in an Indonesian language course at Kanda University of International Studies (KUIS). During the implementation, students participated in guided storytelling sessions, independently explored the digital storybook, engaged in group discussions, and shared their reflections on the learning experience. The implementation stage was intended to explore learners' interactions with the multilingual and multimodal features of the digital storybook rather than to measure instructional effectiveness.

3.5. Evaluation

The evaluation stage focuses on gathering learners' perceptions and experiences regarding the multilingual digital storybook. Qualitative data were collected through classroom observations, facilitator field notes, guided discussions, and students' open-ended written feedback following the implementation. These multiple data sources enabled triangulation of participants' experiences and provided insights into learner engagement, intercultural reflection, linguistic challenges, and suggestions for improving the digital storybook.

The qualitative data were analyzed using thematic analysis following Braun and Clarke's (2006) six-phase procedure: familiarization with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the final report. The analysis resulted in four overarching themes: (1) learner engagement through multimodal features, (2) intercultural reflection, (3) linguistic challenges, and (4) recommendations for product improvement. These themes served as the basis for evaluating the strengths of the developed learning resource and identifying areas for future refinement.

4. Results

4.1. Multilingual and Multimodal Digital E-Book Workflow

A developmental research of “*Indonesia–Japan Folktales*” *Multilingual and Multimodal Digital E-Book* project was initiated as a collaborative effort between Universitas Negeri Jakarta (UNJ) and Kanda University of International Studies (KUIS) Japan. This project was conducted throughout 2025 by integrating two international folktales: *Timun Mas* from Indonesia and *Momotaro* from Japan that are presented with three languages (Indonesian, Japanese, and English). By employing a multimodal framework that combines textual, visual, and auditory elements, the digital e-book project aims to cultivate students’ intercultural competence through an interactive and immersive reading experience.

4.2. Product Description

4.2.1. Product Overview

The final product takes the form of a multilingual and multimodal digital e-book entitled “*Indonesia–Japan Folktales: Timun Mas & Momotaro*”, representing a creative and collaborative effort across different universities and cultures. The product is designed to foster cross-cultural awareness, enhance reading motivation through illustrations and audio, and to provide an authentic multimodal environment for foreign language learners.

4.2.2. Product Structure and Component

Digital book can be accessed at:

(Timun Mas) : <https://heyzine.com/flip-book/342575b932.html#page/1>
(Momotaro) : <https://heyzine.com/flip-book/ac59ce2319.html#page/1>

4.2.3. Product Planning

4.2.3.1. Cover

The book cover is designed with illustrations that reflect the characters and scenarios contained in the story. This is intended to create a cover that is relevant to the content of the story. The Momotaro cover uses a combination of bright natural colors such as light blue and green. These two colors depict Momotaro's journey, which is full of twists and turns, but faced with a positive and optimistic attitude.

Meanwhile, the story of Timun Mas uses a cover that depicts one of the scenes in the story where Timun Mas is being chased by the Giant. This depiction is intended to create a first impression full of mystery and terror, as told in the story of Timun Mas. The use of yellow signifies a warning that Timun Mas will receive, while green

depicts the mystical elements that come from nature.



Image 1 Timun Mas Book Cover
Momotaro Book Cover

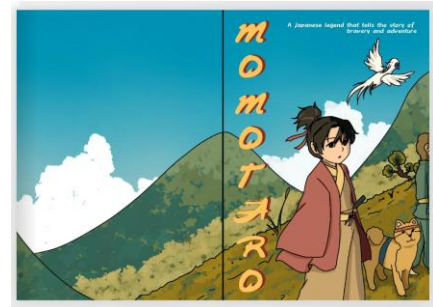


Image 2

4.2.3.2. Narration

Before the story starts, there's a narration that serves as an opening plus the overall story's guide. The narration is steered by fictional characters that represent each culture of the story being told. The Momotaro story has a female narrator who wears traditional Japanese clothing, Kimono. Meanwhile, in the story of Timun Mas, the female narrator wears traditional Indonesian clothing, Kebaya. This depiction serves the purpose of thickening each country's culture in the stories.



Image 3 Timun Mas Narrator
Narrator

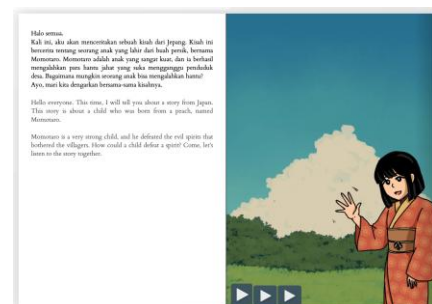


Image 4 Momotaro

4.2.3.3. The Story

The story in each book is presented in sequences. One sequence can consist of one to three scenes that are adjacent to scenes in the narrative. The depiction of scenes is chosen based on crucial moments that occur in each sequence, which can help readers visualize the events in the story. The choice of colors in the story is adjusted to the context of each scene. For example:

- The scene where Momotaro's parents find a peach containing a baby is illuminated by bright sunlight with orange colors that represent the emergence of new hope.
- The giant's pursuit of Timun Mas is depicted using predominantly purple and black

colors, creating a mystical and terrifying aura that envelops the scene.



Image 5 Timun Mas Story

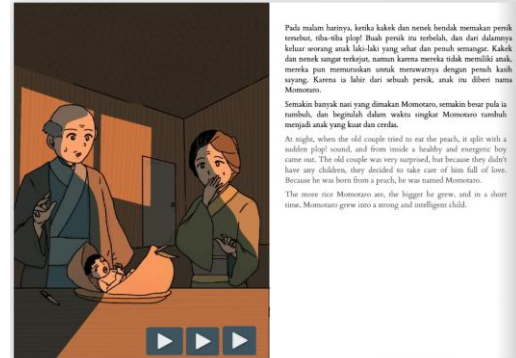


Image 6 Momotaro Story

4.3. Development

The development of the Momotaro and Timun Mas storybooks is divided into three parts. The first part is the illustration stage, which is done manually and digitized using the IbisPaint X application. The second part is the creation of the story narrative using the Canva editing software. The final part is compiling each page into a cohesive storybook in the form of a flipbook on the Heyzine Flipbook website. In addition, this final stage also adds voice recordings that read the narrative and play the roles of each character.

4.3.1. Illustrations

The illustrations begin with drawings in a physical book, which are then applied as digital sketches in IbisPaint X. After the sketches are complete, they are colored in the same application to make the story more luxurious and beautiful.



Image 7 Timun Mas Illustration

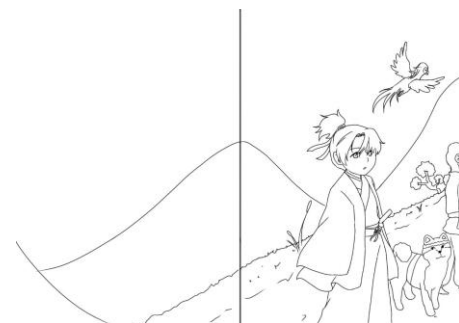


Image 8 Momotaro Illustration

4.3.2. Text Addition

The narration of each story is added in text form to the colored illustrations. The narrative text is created in the Canva application and requires neat and orderly formatting to ensure that the text is easy to read and to maintain the appearance of the illustrations.

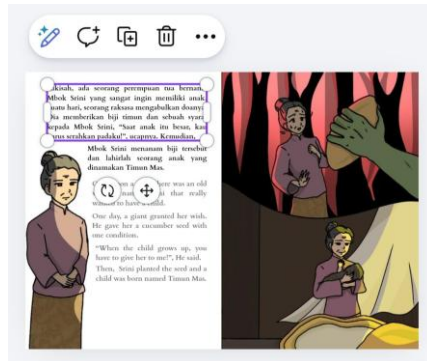


Image 9 Text Addition



Image 10 Text Addition

4.3.3. Flipbook Implementation

Each story is implemented as a Flipbook on the Heyzine Flipbook website. This implementation requires precision to ensure that each page is arranged in the specified order. In addition to the arrangement, audio recordings are also created to enhance the storytelling effect of the stories. These audio recordings require a deep understanding of the story and characters so that the audio does not sound flat, stiff, or monotonous.

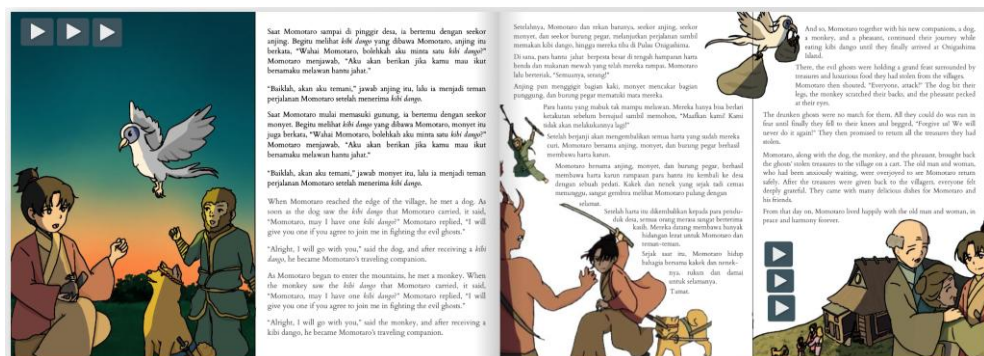


Image 11 Flipbook Implementation

4.4. Implementation

The practical implementation of the digital books was implemented through synchronized development across the digital platforms of both Universitas Negeri Jakarta and Kanda University of International Studies. To evaluate the effectiveness of the multimodal framework, the e-books were integrated into language and culture courses, where students engaged with the multilingual narratives (Indonesian, Japanese, and English) alongside with the support of synchronized audio and visual components.

The process commenced with a guided narration session, where researchers read the stories to participants to establish a foundational understanding of the narrative arc and thematic content. During this phase, an assessment was integrated through strategic questioning to activate prior knowledge and evaluate real-time comprehension. Subsequently, learners transitioned to an autonomous learning stage, allowing for independent exploration of the interactive flipbook at a personalized pace to facilitate deeper interaction with its multimodal elements. This pedagogical sequence concluded with the administration of a response questionnaire, designed to empirically capture the extent of the learners' comprehension and identify the specific insights gained through their engagement with the digital tool.

4.5. Evaluation

The evaluation step highlights the need for rechecking the readability level, a process essential in maintaining the first objective of analyzing the intercultural competence embedded within the digital book. This step ensures that the linguistic complexity does not overshadow the cultural message, allowing for a clearer assessment of how learners perceive and internalize cross-cultural values.

This objective was further supported by positive student feedback regarding the book's multimodal elements; learners responded positively to the familiar narratives of both folktales, noting that the colorful visualizations helped clarify cultural contexts while the synchronized audio aided in mastering Indonesian pronunciation and intonation. However, to optimize the product's effectiveness, several areas for improvement were identified through student responses. These suggestions included the addition of a pop-up glossary to address difficult vocabulary, the use of speech bubbles to distinguish character dialogue, and the inclusion of specific "cultural notes" to explain local Indonesian elements.

4.6. Product Implementation

The multilingual digital storybook was implemented with 8 (eight) Japanese students enrolled in the Indonesian language class at Kanda University of International Studies on September 29, 2025. They were divided into three groups, with each group accompanied by a facilitator and consisting of two to three students to have the opportunity to explore the multilingual digital storybook.

4.6.1. Learners' Positive Perceptions of the Digital Storybook

Table 1. Learners' Positive Perceptions of the Digital Storybook

Students' Preference	Feedbacks	Notes
Most students like <i>Momotaro</i> as it was more familiar and easier to comprehend.	<i>"Kami suka Kibidango Momotaro, itu membuat kami lapar □."</i> ("We love Momotaro's <i>Kibidango</i>, it makes us hungry □.") <i>"Bisa mendengar suaranya dalam Bahasa Indonesia dan Jepang."</i> ("We're able to hear the voice in Indonesian and Japanese.")	Multimodal elements (e.g. text-audio-illustration) contributes to enhance learner engagement and cultural reflection.
Colorful visualizations and illustrations were considered best to clarify the cultural context to the students.	<i>"Yang paling saya sukai adalah ada gambar, jadi lebih mudah memahami cerita."</i> ("The thing I like the most is the pictures, because they make it easier to understand the story.")	
The audio narration helps the students to grasp the stories intonation and pronunciation.	<i>"Audio dalam Bahasa Indonesia membuat saya tahu cara membaca kalimat panjang."</i> ("The Indonesian audio format helps me to understand how to read long sentences.")	
The cross-cultural dimension well-stimulated intercultural reflection.	<i>"Dari membaca dua cerita, saya belajar nilai-nilai keberanian dan kerja sama."</i> ("After reading both stories, I learned valuable lessons about bravery and collaboration.")	

The following table summarizes students' responses and preferences toward the digital storybook. The data were collected from students' direct feedback, indicating that visual illustrations, audio narration, and cross-cultural elements significantly supported

their comprehension and engagement with the folktales. Most students showed a preference for Momotaro due to its familiarity. Overall, the findings suggest that the integration of text, sound, and visuals support the learning experience, pronunciation awareness, and cultural reflection.

4.6.2. Learners' Positive Perceptions of the Digital Storybook

Table 2. Learners' Positive Perceptions of the Digital Storybook

Challenging Aspects	Feedbacks	Notes
Challenging vocabulary.	<i>"Ada banyak kata-kata yang saya tidak tahu."</i> <i>"Kalimatnya panjang."</i> ("There are many unfamiliar words.") ("The sentences are quite long.")	It was suggested that the digital storybook should incorporate a glossary and apply syntactic simplification.
There are no speech bubbles in the story narration.	<i>"Gunakan speech bubble agar dialog lebih mudah dibaca."</i> ("It is recommend to add speech bubble to make the dialogue easier to follow.")	The use of speech bubbles are able to enhance each student's readability and understanding throughout the story.
Difficulties when reading the story aloud.	<i>"Waktu membaca dengan suara keras, sulit pelafalannya."</i> ("It is difficult to pronounce the words when reading aloud.")	The digital storybook should incorporate a pronunciation guide or interactive audio to facilitate them reading aloud and to improve comprehension.
Challenges in grasping the local cultural context.	<i>"Mengapa terasi bisa jadi lumpur mendidih?"</i> ("Why did the shrimp paste can turn into a boil mud?")	Provide cultural notes for the uniquely Indonesian magical elements in the story.

The following table presents the challenges encountered by students during the trial of the multilingual and multimodal digital storybook. The data were gained from direct feedback and learning session observation, highlighting linguistic and design-related difficulties that influenced their learning experience regarding both folktales. These findings provide important insights for further revision and refinement of the digital storybook, particularly in terms of vocabulary level, sentence structure, and visual presentation features.

4.6.3. Improvement Suggestions

Table 3. Student's Suggestion on the tools of the digital storybook

Categories	Student's Suggestion	Follow-up Activities
Navigation & Display	Add a zoom feature and font size adjustment	UX optimization
Vocabulary	To include the meaning of certain words beneath the text.	Integrate a <i>pop-up glossary</i> .
Dialogue	To include speech bubbles for dialogue.	Redesigning based on a <i>graphic novel</i> layout.
Pronunciation	To add a voice guide.	Integrate a <i>read-aloud mode</i> .

The following table outlines the suggested improvements provided by the students regarding their interaction with the digital multilingual storybook. These suggestions reflect their learning needs and user experience, particularly in terms of book navigation and display, vocabulary support, dialogue presentation, and pronunciation features. The proposed follow-up activities were formulated as concrete revisions to enhance the accessibility, usability, and overall learning experience of the multilingual digital storybook while preserving its intercultural and multilingual learning objectives.

5. Discussion

5.1. Multimodality Features as Learning Support

The findings suggest that the multimodal features of the digital storybook played an important role in supporting learners' reading experiences. Participants consistently perceived that the integration of illustrations and audio narration made the stories more accessible, particularly when encountering unfamiliar Indonesian vocabulary and cultural references. Rather than relying exclusively on written text, learners interpreted the stories through the combined use of visual, textual, and auditory representations. For example, one participant commented, "Yang paling saya sukai adalah ada gambar, jadi lebih mudah memahami cerita" ("The thing I like the most is the pictures because they make the story easier to understand".) This reflection indicates that visual representations functioned as

contextual cues that assisted learners in interpreting unfamiliar vocabulary and following the storyline.

Similarly, another participant stated, “Bisa mendengar suaranya dalam Bahasa Indonesia dan Jepang” (I can hear the narration in Indonesian and Japanese”), suggesting that the audio narration supported pronunciation awareness and listening comprehension while providing additional linguistic scaffolding. These reflections demonstrate that participants valued the complementary roles of visual and auditory elements in constructing meaning from the digital storybook.

This finding is consistent with Mayer’s (2014) Cognitive Theory of Multimedia Learning, which proposes that learning materials become easier to process when verbal and visual information are presented simultaneously. The participants’ reflections suggest that the illustration and audio narration reduced the cognitive demands associated with processing unfamiliar foreign-language texts by providing multiple pathways for meaning construction.

The findings also support the multimodal perspective proposed by Kress and van Leeuwen (2006), who argue that meaning emerges through the interaction of multiple semiotic resources rather than language alone. Likewise, Jewitt (2009) emphasizes that multimodal learning environments encourage learners to interpret meaning by integrating textual, visual, and auditory representations. The present findings indicate that learners did not rely solely on written text but actively constructed meaning through the interaction of these multimodal elements.

These interpretations are consistent with previous studies on digital storytelling. Robin (2008) and Sadik (2008) argue that digital storytelling enhances learner engagement by combining narrative, visual, and technological resources into meaningful learning experiences. More recently, Chen and Yeh (2024) demonstrated that collaborative digital storytelling promotes active participation, creativity, and language learning through technology-enhanced environments. While their study focused primarily on collaborative writing, the present study extends this body of research by illustrating how multimodal digital storytelling can also support intercultural language learning through multilingual folktales.

From a Design and Development Research perspective, these findings highlight the importance of integrating multimodal features as essential components of instructional design rather than supplementary elements. The positive perceptions expressed by participants suggest that illustrations and audio narration can enhance learners’ engagement

with multilingual learning materials and create more meaningful opportunities for interacting with culturally embedded narratives.

5.2. Intercultural Reflection through Comparative Folktales

One of the main objectives of the e-book was to encourage learners to engage with cultural perspectives represented in Indonesian and Japanese folktales. The findings suggest that participants actively compared the cultural values embedded in Momotaro and Timun Mas, leading to meaningful intercultural reflection. For example, one participant remarked, *“Momotaro mirip dengan cerita Jepang yang saya tahu, tapi Timun Mas lebih ajaib.”* (“Momotaro is similar to the Japanese stories I know, but Timun Mas is more magical.”). This comparison illustrates that learners were able to recognize both similarities and distinctive characteristics of the two cultural narratives.

Another participant reflected, *“Saya belajar nilai keberanian dan kerja sama dari dua cerita.”* (“I learnt the values of courage and cooperation from two stories.”). This comment suggests that learners did not merely understand the storyline but also identified shared moral values across different cultural traditions. Such reflections indicate that the digital storybook provided opportunities for learners to engage with cultural meanings beyond linguistic comprehension.

These findings are consistent with Byram’s (2012) Intercultural Communicative Competence (ICC) framework, which emphasizes that intercultural learning involves developing openness, interpreting cultural practices, and reflecting critically on cultural similarities and differences. Rather than demonstrating that learners acquired intercultural competence, the present findings suggest that the comparative folktales encouraged learners to reflect on cultural diversity and appreciate perspectives beyond their own cultural background.

Interestingly, several participants also questioned unfamiliar cultural elements presented in the Indonesian folktale. One participant asked, *“Mengapa terasi bisa jadi lumpur mendidih?”* (“shrimp paste that becomes boiling mud”). Rather than indicating misunderstanding alone, this question reflects learners’ curiosity about culturally specific symbolic elements that differ from their prior cultural knowledge. Such moments of inquiry created opportunities for intercultural dialogue and deeper discussion of Indonesian folklore, beliefs, and symbolism.

These findings also resonate with Garcia and Wei’s (2018) perspective on multilingual learning, which views language learning as a process of negotiating meaning

across linguistic and cultural boundaries. Likewise, Kramsch (2006) argues that multilingual learners construct new cultural understandings by positioning themselves between familiar and unfamiliar cultural contexts. In this study, the comparison between Indonesian and Japanese folktales enabled learners to negotiate cultural meanings while reflecting on universal values such as courage, cooperation, and perseverance.

5.3. Linguistic Challenge and Design Implications

The findings revealed that learners encountered linguistic challenges while interacting with the multilingual digital storybook, particularly when reading unfamiliar vocabulary and lengthy sentence structures. These challenges were reflected in participants' comments such as "*Kalimatnya panjang*" (*The Long sentences*) and "*Ada banyak kata-kata yang saya tidak tahu*," ("There are many words that I do not know."). The reflections suggest that, despite the support provided by the multimodal features, the linguistic complexity of certain sections remained demanding for learners studying Indonesian as a foreign language. This finding can be interpreted through Mayer's (2014) Cognitive Theory of Multimedia Learning, which explains that learners have limited cognitive processing capacity when simultaneously decoding unfamiliar linguistic forms and constructing meaning. When vocabulary and sentence structures exceed learners' proficiency levels, additional cognitive resources are required, potentially limiting comprehension even within multimodal learning environments.

The findings are consistent with previous studies reporting that foreign language learners often experience difficulties with unfamiliar vocabulary and sentence complexity when engaging with authentic learning materials (Kashiwagi et al., 2023; Wulandari et al., 2021). Participants' suggestions to incorporate pop-up glossaries, tooltip translations, pronunciation guides, and simplified explanations indicate the importance of instructional scaffolding in multilingual digital learning resources.

5.4. Learner Engagement and Emotional Responses

Throughout the learning session, students mainly employed such positive emojis as 😊, 🍔, 😋, to express their feeling through the session, which indicates an enjoyable learning experience. In line with this finding, affective aspects are considered crucial in language learning because they motivate learners and create emotional resonance with cultural material (Kramsch, 2006). Quotations such as '*Kami suka Kibidango Momotaro, itu membuat kami lapar 🍔*' ('We love Kibidango Momotaro, it makes us hungry 🍔') and

‘Dari membaca dua cerita, saya belajar nilai-nilai’ (‘From reading two stories, I learned values’) signing that the digital storybook able to support positive emotional engagement in the learning process. Thus, the multimodal digital storybook not only presents a cognitive experience, but also brings an emotional and social experience throughout the learning session.

5.5. Multimodal Storytelling as a Medium for Cultural reflection

The digital storybook enables students to reinterpret cultural values within a modern context. One student stated, *“Sekarang kami mencari teman lewat SMS, tetapi Momotaro mendapat teman dengan Kibidango,”* which reflects a transcultural awareness in which learners compare traditional values with contemporary social practices. This finding aligns with Kramsch’s concept of symbolic competence, where learners construct meaning by negotiating between past and present cultural realities (Kramsch, 2006). Thus, the findings suggest that the multilingual digital storybook serves not merely as a reading medium but also as a platform for cultural reflection, enabling learners to connect traditional heritage with contemporary experiences.

6. Conclusion

This study developed a collaborative multilingual and multimodal digital storybook integrating the Indonesian folktale Timun mas and the Japanese folktale Momotaro to support intercultural learning in Indonesian language education. Using a Design and Development Research (DD) approach guided by the ADDIE model, the study demonstrated a systemic process of designing, developing, implementing, and qualitatively evaluating a multilingual learning resource that combines text, illustrations, audio narration, and interactive digital features.

The qualitative findings indicate that participants perceived the digital storybook positively. The integration of multimodal features supported learners’ engagement with the stories and facilitated their understanding in both linguistic and cultural content. Furthermore, the comparative presentation of Indonesian and Japanese folktales encouraged learners to reflect on cultural similarities and differences while appreciating the values embedded in each narrative. Participants also identified several areas for improvement, including vocabulary support, pronunciation guidance, speech bubbles, and additional cultural notes, providing valuable insights for the future refinement of the product.

This study contributes to the growing body of research on multilingual digital storytelling by presenting a collaboratively developed educational resource that integrates multilingualism, multimodality, and intercultural learning within a single instructional design. The study provides qualitative evidence of learners' experiences and perceptions, highlighting the potential of multilingual multimodal digital storybooks to support learner engagement and intercultural dialogue in foreign language education.

Future research may involve larger and more diverse participant groups and adopt mixed-methods or experimental designs to investigate the impact of multilingual digital storybooks on language learning outcomes and intercultural competence more comprehensively.

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