

LOCAL TRADITIONS IN DIGITAL FORMAT: THE “SIRAMAN GONG KIAI PRADAH” E-TEXTBOOK FOR CULTURAL AND ECOLOGICAL LITERACY
(Tradisi Lokal dalam Format Digital: Buku Teks Elektronik "Siraman Gong Kiai Pradah" untuk Literasi Budaya dan Ekologi)

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Abstract

This study aims to develop culturally and ecologically oriented digital learning materials by integrating the Siraman Gong Kiai Pradah tradition into Indonesian language learning. The study employed a Research and Development (R&D) approach based on the 4D model, limited to the Develop phase. Initially, a needs assessment was conducted through teacher interviews and student questionnaires, alongside observations and interviews with local cultural practitioners. Data analysis utilized a combination of qualitative and quantitative descriptive techniques. The results of the analysis served as the basis for revising and refining the developed instructional materials until they were deemed appropriate for use. The findings indicate that, in the Define phase, teachers expressed the need for learning materials integrated with local culture, while students preferred digital, accessible, and interactive media. In the Design phase, a discourse structure, interactive learning activities, and a digital flipbook supported by text, images, and videos were developed. The Develop phase produced a prototype validated by experts in content, language, and media, achieving an average score of 3.6, categorized as good. Teachers' evaluation of the material feasibility reached 82.5%, while the limited trial yielded positive responses (73–78%) across all aspects. Therefore, this local wisdom-based digital learning material is considered feasible as an alternative medium for Indonesian language instruction that is contextual, interactive, and capable of enhancing students' cultural literacy.

Keywords: digital teaching materials, local traditions, Siraman Gong Kiai Pradah, cultural and ecological literacy

Abstrak

Penelitian ini bertujuan untuk mengembangkan materi pembelajaran digital berorientasi budaya dan ekologi dengan menggabungkan tradisi Siraman Gong Kiai Pradah dengan pembelajaran bahasa Indonesia. Penelitian ini dilakukan dengan pendekatan Penelitian dan Pengembangan (4D), yang terbatas sampai fase Develop. Pertama, dilakukan penilaian kebutuhan melalui wawancara guru dan kuesioner siswa, sementara pada saat yang sama, observasi dan wawancara dengan praktisi budaya lokal juga dilakukan. Analisis data dalam penelitian ini menggunakan kombinasi analisis deskriptif kualitatif dan kuantitatif. Hasil analisis tersebut digunakan sebagai dasar untuk melakukan revisi dan penyempurnaan bahan ajar yang dikembangkan hingga dinyatakan layak digunakan. Hasil penelitian menunjukkan sebagai berikut. Pada tahap Define, ternyata guru menginginkan materi pembelajaran yang terintegrasi dengan budaya lokal, sedangkan siswa lebih menyukai media yang digital, mudah diakses, dan interaktif. Pada tahap Design, dirancang struktur wacana, aktivitas pembelajaran interaktif, dan buku digital (flipbook) yang didukung dengan teks, gambar, dan video. Tahap Pengembangan menghasilkan prototipe yang divalidasi oleh para ahli di bidang konten, bahasa, dan media, serta mencapai skor rata-rata 3,6 dalam kategori baik. Penilaian guru terhadap kelayakan materi mencapai 82,5%, sementara uji

coba kecil menghasilkan reaksi positif (73-78%) dalam semua aspek. Dengan demikian, bahan ajar digital berbasis kearifan lokal ini dinyatakan layak digunakan sebagai alternatif media pembelajaran bahasa Indonesia yang kontekstual, interaktif, dan mampu mendukung penguatan literasi budaya siswa. **Kata-kata kunci:** bahan ajar digital, tradisi lokal, Siraman Gong Kiai Pradah, literasi budaya dan ekologis

INTRODUCTION

The concern of the writer on the declining understanding of local tradition among young people, especially the Siraman Gong Kiai Pradah tradition in Sutojayan District, Blitar Regency, is the driving force behind this research. This tradition, which is a ritual of purification (jamasan) of the sacred heirloom Gong Kiai Pradah, is carried out annually in the months of Syawal and Rabi' al-Awwal and contains significant historical, philosophical, and cultural values. However, its continuity is increasingly threatened, especially due to limited youth involvement. Hartanto et al. (2022) reported the decline of local cultural knowledge among young people, which may lead to erosion of cultural identity. This worry is further strengthened by the chief of the cultural community of Gong Kiai Pradah, who stresses the importance of understanding the historical and philosophical meanings of the tradition in order to ensure its preservation.

Literally, the decline of cultural literacy is closely related to lifestyle changes and rapid technological advancements. At the same time, the development of information and communication technology (ICT) has changed conventional teaching practices to digital formats (Cahyani et al., 2023). Digital learning materials are considered more flexible, interactive, and interesting than traditional printed textbooks, which are often seen as monotonous (Ali et al., 2024; Murphy et al., 2024; Nyambane, 2021). Furthermore, Syafruddin et al. (2025) argue that digital materials support the development of 21st-century skills.

In education, incorporating local culture into classroom learning is recognized as an effective strategy to deal with this problem. Wahyuni et al. (2025) argue that culture-integrated learning not only enhances contextual relevance but also promotes meaningful student engagement. Other studies

have also shown that learning materials based on local culture contribute to strengthening cultural literacy, identity formation, and intercultural understanding (Ermawati et al., 2025; Hasnah et al., 2024; Ripai & Wardani, 2025).

Besides cultural issues, environmental problems have become a global priority. Strengthening ecological literacy is vital for cultivating students' environmental awareness. Hendratno et al. (2025) discovered that culture-based learning materials significantly improved students' ecological literacy, while (Chen et al., 2025) demonstrated the effectiveness of multimedia e-books in promoting pro-environmental attitudes. Therefore, the development of learning materials combining local culture and ecological perspectives is highly relevant.

However, previous research mostly focused on either local culture-based learning materials or digital learning media separately, and only a very few explicitly integrated cultural and ecological literacies in one learning design. Moreover, previous studies tended to emphasize the general cultural context, giving very little attention to specific local tradition such as Siraman Gong Kiai Pradah. Next, the use of interactive digital formats like flipbook enriched with multimedia elements is still under-explored in the context of Indonesian language learning. Therefore, this study offers a new contribution by developing digital learning materials that are culturally and ecologically oriented and specifically integrate the tradition of Siraman Gong Kiai Pradah into Indonesian language teaching through an interactive digital platform.

Nevertheless, the development of digital learning materials based on culture requires a proper approach including collaborative and culturally responsive design as well as ethical considerations in the use of local knowledge

(Chiriac & Balmus, 2022; Wang et al., 2026). Teachers also play an important role as cultural mediators in the learning process (Toledo-Sandoval, 2020).

Based on the above considerations, the problems of this research are formulated as follows: (1) how are the needs for developing culture- and ecology-based digital learning materials in Indonesian language learning, (2) how should digital learning materials integrating the Siraman Gong Kiai Pradah tradition be designed, and (3) how feasible are the developed materials. In line with these research problems, the objectives of this study

THEORETICAL FRAMEWORK

This study is anchored in four connected theoretical concepts: (1) culture-based digital learning material development, (2) cultural literacy, (3) ecological literacy, and (4) the fusion of Traditional Ecological Knowledge (TEK). These concepts form a consistent conceptual foundation for creating and assessing digital teaching materials that integrate local Indonesian traditions into language learning.

Development of Culture-Based Digital Learning Materials

Developing digital teaching materials that depict indigenous cultural practices is grounded in the perspectives of contextual and culturally responsive learning, which prioritize meaningful learning through connections to culture and life. Research findings indicate that "combining local culture and ecological literacy leads to higher student engagement, better academic performance, and improved communication and awareness of ecology". This is consistent with Ermawati et al. (2025) and Ripai & Wardani (2025) who have documented that culturally rooted digital textbooks enhance both student involvement and learning outcomes.

To create such materials effectively, the process must be repeated and involve a group of people. Studies have shown that "repeated designing, community checking, and culturally based teaching methods are necessary for both depth and broad

are: (1) to analyze the needs for developing learning materials, (2) to design culture- and ecology-based digital learning materials, and (3) to evaluate the feasibility of the developed materials.

Thus, this research is expected to contribute to the development of contextual and interactive digital learning materials that support students' enhancement of cultural and ecological literacy in Indonesian language learning.

implementation". This conforms with Ding (2025) who underlines iterative validation in digital textbook creation, and Nourie (2021) who demonstrates the success of cooperative digital textbooks in improving learning experiences.

Besides that, a multidisciplinary method is necessary too. It has been highlighted that "teamwork and interdisciplinary approaches that incorporate cultural practitioners, educators, and multimedia producers increase authenticity and educational value". Also Asmayawati et al. (2024) point to school program changes based on local knowledge and digital literacy.

Technological advancements boost this method. Research has shown that "using AR, AI, and a multimodal approach results in more interaction and a greater effect, though one should keep cultural nuances". Simanjuntak et al. (2025), for instance, present a study of digital media based on indigenous knowledge that supports literacy and environmental awareness simultaneously.

Cultural Literacy

Cultural literacy is the knowledge and skills to understand, analyze, and discuss cultural values in society. Studies show that the "use of culture-based content supports intercultural communication and at the same time fosters local identity". This is reinforced by Hasnah et al. (2024) and Dahmardeh & Mahdikhani (2025) who stress the

genuineness of learning materials made locally.

Still, there are issues with the way cultures are represented. Researchers indicate that "digital materials usually highlight cultural products; however, representation of cultural perspectives and practices are rarely enough". This point is in line with Chau et al. (2024), who in their examination of textbooks point out the lack of cultural representation.

An important factor that mediates is the teachers' role. Toledo-Sandoval (2020) recognizes that it is the teachers who link the cultural content with the students' life-worlds, while the research by Alexon et al. (2024) shows that use of local content significantly raises student interest and relevance of learning.

This paper considers cultural literacy as a major learning goal. Through the Siraman Gong Kiai Pradah method, teachers can lead their students to a deeper cultural understanding and perform both design and instructional evaluation based on this cultural insight.

Ecological Literacy

Ecological literacy involves awareness, knowledge, and the driving of change regarding the environment and its sustainability. One study has found that "reading materials with ecological themes increases environmental knowledge, modifies attitudes, and encourages ecological behavior, especially when supported by interactive multimedia and ecomedia literacy". This is the same line of thought with Chen et al. (2025) and Weng (2022), who both consider the use of interactive e-books to be effective in raising eco-awareness.

Besides providing knowledge, ecological literacy is also conferring behavior. It was pointed out that "environmental awareness and perceived behavioral control" were considered two of the main elements contributing to pro-environmental behavior", which underscores the necessity to incorporate ecological principles in education.

Therefore, ecological literacy will be an additional output in this study as it is

inseparably linked to the environmental and sustainability values that are part of the Siraman Gong Kiai Pradah tradition.

Integration of Traditional Ecological Knowledge (TEK)

The use of local customs in digital learning materials is essentially the same as the incorporation of TEK. According to the literature, "TEK should be seen as an evolving and changing knowledge system rather than merely a piece of extra knowledge". Similarly, Wang et al. (2026) acknowledge that Indigenous knowledge systems are constantly changing and cyclical in nature.

Respect for the community is paramount among other factors. The authors write, "ethical protocols are a way to reinforce local community sovereignty, respect intellectual property, and ensure that local leaders are consulted". Robinson et al. (2021) recognize the need to respect the Indigenous voice, while (Adefila et al., 2021) provide a good example of education for sustainability based on jointly developed and ethical frameworks.

Moreover, a participatory approach is a must. According to the authors, "co-creation, intercultural dialogue, and local value integration are among the steps needed to achieve epistemic justice". They are in total agreement with (Jones et al., 2025), who see co-creation as a way of bridging Indigenous and scientific knowledge systems.

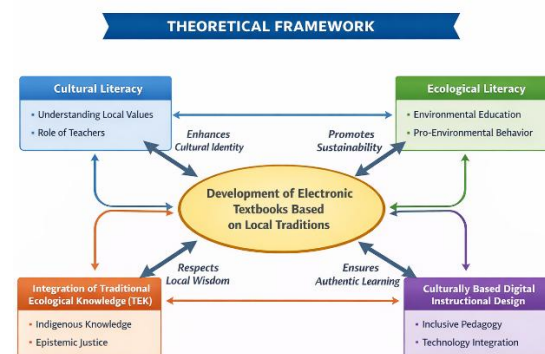


Figure 1 Synthesis of Theoretical Framework

Summary of Theoretical Framework

Bringing together these theoretical points of view results in a comprehensive framework. The literature points out that "the

effectiveness of culturally grounded digital textbooks is determined by the same factors that influence any other well developed innovative materials: interdisciplinary teamwork, commitment to epistemological justice and community sovereignty efforts, and the use of innovative technologies".

In this way, the research takes digital learning materials as the main measure, while cultural literacy and ecological literacy are the expected learning results. Three activities, namely iterative design, expert validation, and user feedback make this connection operational. Therefore, the theoretical framework, apart from providing conceptual support, also forms the foundation on which the analytical and interpretive work will be done.

METHOD

This study employed a Research and Development (R&D) approach to develop and evaluate digital teaching materials grounded in local wisdom. The selection of the R&D method is justified by the research objectives, which involve not only designing a product but also systematically validating its feasibility and usefulness in addressing identified learning needs. R&D is particularly suitable for educational innovation because it integrates iterative processes of design, testing, evaluation, and revision based on empirical data (Waruwu, 2024).

The development model adopted in this study was Thiagarajan's 4D model (Define, Design, Develop, Disseminate). The choice of this model is justified by its structured and systematic framework, which emphasizes needs analysis, instructional design, and product validation. Compared to other models, the 4D model is more focused and efficient for educational product development, especially when the goal is to produce validated instructional materials. In this study, the process was limited to the first three stages—Define, Design, and Develop—due to the focus on initial product development and feasibility testing.

The product developed was a digital teaching material in the form of an interactive

flipbook integrating the Siraman Gong Kiai Pradah tradition to support Indonesian language learning, particularly in enhancing students' cultural and ecological literacy.

Research Participants and Demographics

The study involved four Indonesian language teachers and sixteen junior secondary school students from Sutojayan District, Blitar Regency, East Java. The teachers had teaching experience ranging from 5 to 15 years, while the students were aged between 13 and 15 years. Participants were selected using purposive sampling based on their active involvement in Indonesian language learning. Additionally, two cultural informants—the head of the cultural community and the custodian of the Siraman Gong Kiai Pradah tradition—were selected using purposive and snowball sampling based on their expertise and roles in preserving the tradition.

Research Procedures

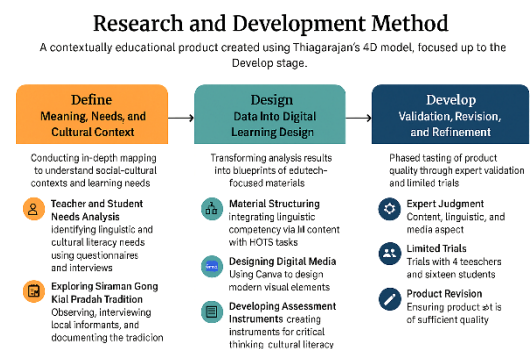


Figure 2 Research and Development Method

The research was conducted systematically in three stages. **Define Stage:** Needs analysis was conducted through semi-structured interviews with teachers, questionnaires for students, and group discussions. Cultural data were collected through field observations, interviews with cultural practitioners, and documentation of the Siraman Gong Kiai Pradah tradition. **Design Stage:** The instructional design included developing learning objectives, structuring discourse, designing interactive learning activities, and producing digital materials using

Canva with multimedia features (text, images, videos, QR codes). At this stage, research instruments were also developed. **Develop Stage:** The prototype was validated by three experts (content, language, and media) using structured validation sheets. A limited trial was then conducted involving teachers and students. Feedback from validation and trials was used for revision until the product met feasibility standards.

Research Instruments

The instruments used in this study included: (1) Teacher and cultural practitioners interview guidelines (focusing on instructional needs and challenges); (2) Student questionnaires (Likert scale 1–4) measuring needs and responses; (3) Expert validation sheets (Likert scale 1–5) assessing content, language, and media; (4) Observation and documentation checklists.

Data Analysis Techniques

Data analysis combined qualitative and quantitative methods. Qualitative Analysis: Qualitative data from interviews, observations, and open-ended responses were analyzed using the interactive model (Miles & Huberman): Data reduction (selecting relevant information); Data display (organizing data into themes); Conclusion drawing (interpreting findings). Quantitative Analysis: Quantitative data from questionnaires and validation sheets were analyzed using:

- Mean score:

$$\bar{X} = \frac{\sum X}{N}$$

- Percentage:

$$P = \frac{\text{obtained score}}{\text{maximum score}} \times 100\%$$

Feasibility Criteria

Score Range	Category
81–100%	Very feasible
61–80%	Feasible
41–60%	Fair
≤40%	Not feasible

For expert validation (scale 1–5):

- 4.21–5.00 = Very good
- 3.41–4.20 = Good

- 2.61–3.40 = Good Enough
- ≤2.60 = Poor

A product is considered feasible if it achieves at least the “feasible/good” category (≥61% or ≥3.41).

Ethical Considerations

This study adhered to ethical research standards. All participants were informed about the purpose of the study and provided voluntary consent prior to data collection. Participants’ identities were kept confidential, and data were used solely for research purposes. Cultural data collection was conducted respectfully, ensuring acknowledgment of local knowledge holders and avoiding misrepresentation of the Siraman Gong Kiai Pradah tradition.

DISCUSSION

Finding

The development results of the digital teaching materials based on local cultural traditions are presented through the three stages: Define, Design, and Develop. The findings integrate qualitative data (interviews, observations, cultural analysis) and quantitative data (needs questionnaires, expert validation, teacher evaluation, and student responses) to provide a comprehensive understanding of learning needs, design processes, and product quality.

Define Stage: Needs Analysis and Cultural Context

This phase, called Define, took place in July, August 2025 in Sutojayan District, Blitar Regency, East Java, ahead of the Siraman Gong Kiai Pradah tradition event, and was carried on during the ritual on September 6, 2025. The purpose of this phase was to discover what instructional needs were and also to identify the possibility of blending the local culture content in the Indonesian language learning.

Those who took part in this phase were Indonesian language teachers, students as well as local cultural practitioners. For instance, the needs analysis focus was on four Indonesian language teachers and sixteen junior high school students. The method of choosing

teachers and students was done by purposive sampling due to their direct involvement in the Indonesian language subject and also because of their familiarity with current teaching materials. On the other hand, cultural informants were the head of the cultural community and a keeper of the Siraman Gong Kiai Pradah tradition. They were chosen based on purposive and snowball sampling methods whereby their authority, expertise, and active preservation roles of the tradition were taken into consideration.

Data collection was implemented through various methods to a high degree of data validation and elaboration. Teacher's data were gathered through semi-structured interviews that were subjected to instructional practice and challenges on cultural integration focus. Student' data were obtained through questionnaires which were designed to acquire their preferences, needs, and feelings towards digital and cultural-based learning materials. Furthermore, observation and interview with cultural practitioners were done before and after the ritual so as to record the historical background, the ritual stages, the underlying philosophical meanings, and the ecological values relating to the Siraman Gong Kiai Pradah tradition. Along with that, visual documentation was also used to collect supportive data.

Interview data with the teachers revealed that still the main source of instruction was textbooks which did not contain much information about the local culture and hence failing to provide students with an opportunity to develop their cultural literacy. This therefore points to a gap between the requirements of contextual learning and what is usually done in the classrooms. The student questionnaire also confirmed this view that majority of the students acknowledged the necessity of learning local culture and wanted teaching materials that were non-traditionally delivered, therefore interactive and engaging as well as those which are based on digital medium. Their favorable stand on digital media shows that they are also ready to use technology in learning.

The cultural information has revealed that the Siraman Gong Kiai Pradah tradition is a practice that is rich with values such as environmental protection, spirituality, and social togetherness which are certainly of great relevance for the incorporation, in instructional materials, of cultural, as well as ecological, literacy.

In general, a combination of the Define stage materials points to the fact that teaching materials should, a) be highly culture-oriented, b) take advantage of digital technology to enhance interactivity, c) be fully compatible with the curriculum and d) be able to build up students' linguistic, cultural and ecological competences.

Design Stage: Integrating Linguistic and Cultural Content in Digital Format

During the Design stage, a blueprint of the digital teaching materials was developed, incorporating pedagogical, visual, and technological considerations.

1. Structure and Content Design

The researchers designed exposition text materials (characteristics, structure, and linguistic features) integrated with the cultural content of Siraman Gong Kiai Pradah. The materials were aligned with the curriculum and student characteristics and organized into learning outcomes corresponding to the four language skills: listening, reading, writing, and speaking.

In addition to integrating local culture, an ecopedagogical approach was incorporated to foster students' environmental awareness alongside cultural understanding.

2. Learning Activity Design

Learning activities were varied to enhance student engagement and motivation, including individual tasks, group discussions, collaborative projects, mini activities, and formative quizzes.

3. Digital Media and Layout Design

The teaching materials were developed in a digital flipbook format that is interactive, accessible, resembles a printed book, and incorporates supporting text, images, and videos.

4. Assessment Instruments and Prototype Drafting

Assessment instruments included objective exercises, essay tasks, and scoring rubrics. All components were integrated into an initial prototype draft of the digital teaching materials.

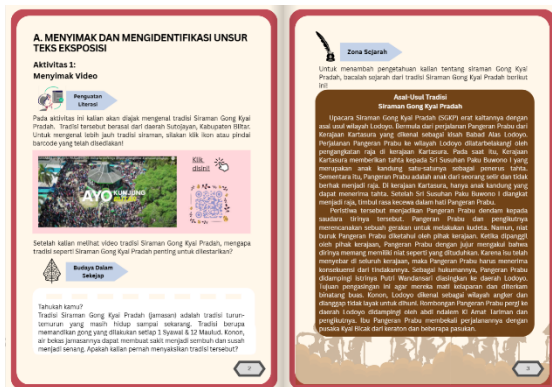


Figure 3 Sample Initial Draft of Teaching Materials

This design stage demonstrates that linguistic-cultural integration can be effectively realized through a systematic content structure, interactive learning activities, and digital media support that is adaptive to students' needs.

Develop Stage: Validation, Revision, and Product Refinement

The Develop stage aimed to ensure product quality through expert validation, teacher evaluation, and limited student trials. Validation was conducted by subject-matter experts, language experts, and media experts using a five-point Likert scale (1–5).

1. Expert Validation

The product was evaluated by content experts, language experts, and media experts using a five-point Likert scale (1–5). The summary of validation results is presented in the following table.

No	Validation Aspects	Average Score	Category
1.	Subject matter experts	3, 75	Good
2.	Language experts	3, 67	Good
3.	Media experts	3, 33	Good
	Total Average	3, 6	Good

The results of the validation by experts are summarized below:

(1) Content Expert: The content was aligned with the intended learning outcomes and also integrated local cultural elements. The main points for revision were to use standardized vocabulary, to clearly inform about AI-generated illustrations and to add a “Trivia” section for enhancing students' contextual engagement.

(2) Language Expert: It was noted that the language was clear and that the spelling was consistent with the official Indonesian orthographic rules (Ejaan Yang Disempurnakan). Nevertheless, it was recommended that reflective questions be enhanced so as to boost learners' interaction and critical thinking.

(3) Media Expert: The recommendations include re-organizing the layout and referring to the SIBI book design standards in order to achieve greater visual coherence and professional quality.

With the overall mean score of 3.67, the product can be considered feasible for use with minor revisions.

2. Teacher Evaluation: Feasibility of the Teaching Materials

Teachers, four in number, were asked Teachers of Indonesian language who are four in number, have jointly evaluated the teaching materials using ten criteria of assessment. The overall average of their feasibility assessment is 82.5 percent which is the category of "very feasible". The diagram of the radar below represents the feasibility profile of the developed teaching materials.

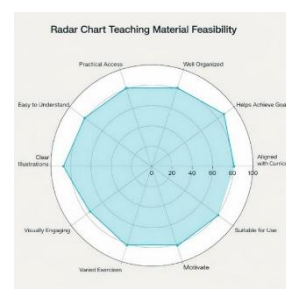


Figure 4 Radar Chart Eligibility of Teaching Materials

Out of the ten criteria being measured, two aspects were able to get the highest scores

i.e. how far the teaching materials can be used for supporting learning objectives results (87.5%) and effectiveness of images/illustrations can be used in clarifying the instructional content (87.5%). These results show that both content and supporting visuals have been effectively designed. On the other hand, the criterion related to how attractive is the visual presentation for students gets a comparably lower score (75%), which suggests that the need for improvement in the aesthetic design of the teaching materials is still present. Generally, the remaining eight criteria are about 81.3% which reflect the qualities of the materials in terms of curriculum alignment, accessibility, language use, and the ability to motivate students. These evidences reaffirm that the teaching materials are appropriate for use as a learning resource even though the work on visual design can still be done.

3. Student Responses: Practicality and Readability of the Product

The study involved 16 students and the results showed that the electronic textbook gained a lot of positive responses from the students in the aspects measured. The average student response was around three out of four with percentage scores ranging from 73% to 78%. The graph below shows the product trial results.

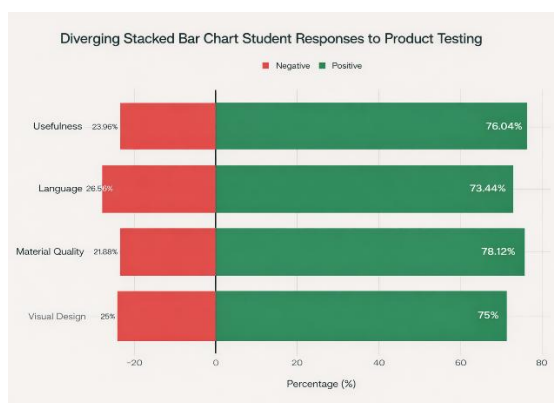


Figure 5 Diverging Stacked Bar Chart Product Trial

Here is the detailed description of the results: (1) the highest score in the material quality aspect showed that students regarded the content as clear, interesting and appropriate; (2) the language aspect got the lowest score, though it was still within the

good category, which implies that the language was generally understandable but could still be simplified; and (3) the visual presentation, design and usefulness aspects were evaluated as attractive and helpful to increase learning motivation and appreciation for local culture.

In summary, the research has managed to formulate a digital teaching material with local culture at the core of the Siraman Gong Kiai Pradah tradition which is also responsive to the needs of students and teachers, content, language, and media experts have validated the material as feasible, teachers have given very positive rating (82.5%), and students have also responded well (73-78%). The product can be used as learning materials for Indonesian language, with further work required for visual design and selected linguistic elements.

Discussion

A thorough review of the Define, Design, and Develop phases has been done here highlighting how the identification of instructional gaps has led to the creation of the digital learning product.

During the Define phase, the disparity between the traditional method of teaching the Indonesian language which mainly depended on general textbooks and the students' desire for more culturally localized materials was very much evident. This discovery is harmonious with Ermawati et al. (2025), who hold that digital textbooks that are culturally grounded enhance students' academic literacy and cultural identity, and also Hoerudin (2025), who through digitally integrated culturally learning environments emphasizes the role of culture in education. The cultural description of the Siraman Gong Kiai Pradah tradition which discussed three main values ecological, spiritual, and social supports the research findings of Suwandi et al. (2020) and Hendratno et al. (2025) about culture and environmental literacy. Besides, by incorporating cultural practitioners the project has both remained genuine and addressed the issues raised by Chau et al. (2024) and Dahmardeh & Mahdikhani (2025) about

misrepresentation of culture while is also in line with (Druker-Ibáñez & Cáceres-Jensen, 2022). The fact that teachers act as cultural mediators Toledo-Sandoval (2020) further highlights the necessity of culturally sensitive instruction.

For the Design phase, the recognized requirements were turned into a well-structured blended learning model that fused the language, culture, and environment areas. The practice of culturally inclusive instructional designing principles Gunawardena et al. (2018) is clearly reflected in the use of expository texts and other reflective cultural activities as well as learning tasks supporting student participation. This supports the research of Ripai & Wardani (2025) who point out that digitally culturally grounded materials have the potential to significantly increase students' engagement. The adoption of a digital flipbook caters to multimodal learning as suggested by Chang et al. (2019) and Simanjuntak et al. (2025), whereas the combination of linguistic precision and cultural context indicates a careful balance stressed by Li et al. (2025). The whole designing effort is at par with collaborative and round of development as enumerated by (Chiriac & Balmus, 2022).

Once brought out, the product was subjected to expert evaluation and user feedback to ascertain that it was conforming with standard norms through appropriate content, language, and media quality. This aligns with the iterative validation approach in instructional design put forward by (Ding, 2025). Teacher assessments are a form of consensus on cultural basing of teaching materials, according to the earlier research of Alexon et al. (2024) and Maulana et al. (2024). Besides, it is highly likely that students' heightened motivation and ecological consciousness that were expressed in the feedback are consistent with the studies of Chen et al. (2025), Weng (2022), and Suwandi et al. (2020) in digital learning for ecological awareness. Collaborating with cultural practitioners from an epistemological standpoint, this study corresponds with the idea of epistemic justice as articulated by

Kimmerer (2012) and Wang et al. (2026), who view local knowledge holders as active contributors in knowledge production.

From a theoretical viewpoint, this research makes four major contributions. Firstly, it puts into practice the notion of culturally responsive teaching in a digitally mediated learning environment thus expanding the work of Gunawardena et al. (2018). Secondly, it advocates intercultural approach to language learning by combining cultural literacy and ecological literacy which is supported by Suwandi et al. (2020) and Chen et al. (2025). Thirdly, by showcasing the vital role of iterative validation incorporating various stakeholders, it fortifies R&D instructional design (Chiriac & Balmus, 2022; Ding, 2025). Lastly, it pushes forward the discussion on epistemic justice in education by engaging local cultural practitioners as knowledge partners (Kimmerer, 2012; Wang et al., 2026).

While this study has lots of common issues with the others, with novel contributions to each particular one that it shares a simple research framework with, it also, inevitably, goes beyond the limitations of the former. For instance, it corroborates the effectiveness of culturally based digital textbooks that enhance literacy outcomes as in Ermawati et al. (2025) Indonesia, but it adds ecological literacy in a very explicit way. On the other hand, going down the same path as Chen & Tsai (2025) whose focus was on multimedia e-books in environmental attitudes, this research incorporates ecological values into local cultural traditions which results in a more contextualized approach. Moreover, whereas Dahmardeh & Mahdikhani (2025) stress the authenticity of local textbooks in a different cultural context, this study in a way of digital interactive design and participatory cultural validation combines authenticity and practice.

Even though there is a lot that can be learned and borrowed from what this study has achieved, a few issues took away some of the sheen. Firstly, the research work was done on a small scale, with a comparatively small number of subjects, thereby limiting the extent to which the results can be generalized. The

questionnaires used did not concentrate on learning outcomes but mostly measured the feasibility of the product and user satisfaction. On the whole, the digitization process, simplifying cultural meanings which are quite complex can be a form of cultural reductionism. This is a problem also identified by (Chau et al., 2024). Besides the reliance on flipbook-based digital media can limit the accessibility to users in the context with limited technological background.

As for the practical implications, this research work would argue that education policy makers should empower schools in their mission to bring local cultural content into their curricula by providing flexible and context-sensitive frameworks. Educators themselves have to be the ones first to experience the benefits of such cultural materials hence home grown digital materials would be a good starting point for them. Besides, the collaboration with cultural communities has to be mainstreamed in order to worship authenticity and ethical representation to be in line with Druker-Ibáñez & Cáceres-Jensen (2022).

Next generation research needs to take education beyond this stage and carry out multiple-context spreading the long-term effects on students' cultural identity and ecological behavior/externalization. There are explorations on advanced digital learning technologies and platforms which are intended to tap more interactive or immersive component levels and build upon the work of Chang et al. (2019). In addition, more in-depth research into ethical culture-related issues, including cultural ownership and representation, is essential to meet the concerns of Wang et al. (2026) and Kimmerer (2012).

There are some limitations in this research which include not only limited trial scale, but the lack of evaluation of long-term impact, the possible reduction in cultural meaning during the digitization, and dependence on technology based on flipbook.

In terms of practicality, culturally grounded digital materials facilitate contextual learning and at the same time support cultural

identity formation. In terms of theory, this paper adds a voice to the discourse on cultural and ecological literacy integration in the context of digital language learning and presents opportunities for further research on long-term impact on students' behavioral changes and identity.

CONCLUSION

This research addresses the issues raised in the study by revealing that (1) there is a definite requirement for Indonesian language materials that are both culturally integrated and digitally engaging, (2) the solutions to those requirements are through the creation of a digital flipbook that combines linguistic, cultural, and ecological components, and (3) the product made is ready, as the evidence of expert validation, teacher evaluation (82.5%), and students' positive reactions (73–78%) show.

The piece of research presents the following contributions: (1) it shows how local cultural traditions can be systematically combined with digital instructional design, (2) it widens the scope of Indonesian language learning by incorporating cultural and ecological literacy, and (3) it provides a research-based example of the development of digital materials through R&D.

In practice, policymakers are urged to allow curriculum leniency for the integration of local culture; teachers are recommended to use digitally based materials rooted in culture to increase student engagement and contextual learning; and schools should also organize teaming up with cultural communities in order to keep the authenticity.

Further studies should involve multisite and wider-scale trials, monitor the long-term effects on students' cultural self-identification and their ecological behavior, and continue to develop and use more advanced digital platforms without sacrificing the cultural authenticity.

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