



Jawafriend: Adaptive preservation of Javanese culture in digital platform

Yudi Pratama¹, Neni Wahyuningtyas², Bayu Kurniawan³

^{1,2,3} Universitas Negeri Malang, Malang, Indonesia

pratamayudi.fis@um.ac.id¹, neni.wahyuningtyas.fis@um.ac.id², bayu.kurniawan.fis@um.ac.id³

ABSTRACT

This study examines the development of a website-based learning media, JawaFriend.org, as an adaptive strategy to preserve Javanese culture in the digital era. The purpose of this study is to design, develop, and evaluate digital learning media that integrate Javanese cultural values with contemporary technological features to strengthen students' cultural understanding. This study employs a modified ADDIE model, comprising needs analysis, content and interface design, media development, implementation, and evaluation. Data were obtained through expert validation involving media, language, and material experts, using an assessment sheet that was analyzed descriptively and quantitatively to determine product feasibility by calculating validity and practicality scores using a Likert scale, with points 1-4. The results showed that JawaFriend.org achieved a validity score of 91% and a practicality score of 92%, both of which fall within the very valid and convenient categories. This platform can present cultural materials, including history, traditional houses, arts, traditional clothing, and folk games, through interactive maps, cultural quizzes, and multimedia narratives. These findings indicate that JawaFriend.org is a viable and innovative tool for cultural learning, enhancing cultural literacy, and supporting the sustainability of Javanese culture amidst globalization.

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ABSTRAK

Penelitian ini mengkaji pengembangan media pembelajaran berbasis situs web, JawaFriend.org, sebagai strategi adaptif untuk melestarikan budaya Jawa di era digital. Tujuan penelitian ini adalah merancang, mengembangkan, dan mengevaluasi media pembelajaran digital yang mengintegrasikan nilai-nilai budaya Jawa dengan fitur teknologi kontemporer untuk memperkuat pemahaman budaya murid. Penelitian ini menggunakan model pengembangan ADDIE yang dimodifikasi, meliputi analisis kebutuhan, desain konten dan antarmuka, pengembangan media, implementasi, dan evaluasi. Data diperoleh melalui validasi pakar yang melibatkan pakar media, bahasa, dan materi, menggunakan lembar penilaian yang dianalisis secara deskriptif dan kuantitatif untuk menentukan kelayakan produk dengan perhitungan skor validitas dan kepraktisan menggunakan skala likert menggunakan poin 1-4. Hasil penelitian menunjukkan JawaFriend.org mencapai skor validitas 91% dan skor kepraktisan 92%, yang keduanya termasuk dalam kategori sangat valid dan sangat praktis. Platform ini dapat menyajikan materi budaya termasuk sejarah, rumah adat, kesenian, pakaian adat, dan permainan rakyat melalui peta interaktif, kuis budaya, dan narasi multimedia. Temuan ini menunjukkan bahwa JawaFriend.org merupakan perangkat yang layak dan inovatif untuk pembelajaran budaya, meningkatkan literasi budaya, dan mendukung keberlanjutan budaya Jawa di tengah globalisasi.

Kata Kunci: budaya Jawa; pelestarian budaya; platform digital

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INTRODUCTION

The digital revolution is transforming the ways and means of human interaction with cultural heritage by providing new methods of documenting and recording cultural information. In this effort, a site named *Jawafriend.org* is being developed as a wide-scale resource for learning Javanese history and culture, bridging generations through cross-cultural exchange. The novelty lies in adapting digital technologies to preserve culture, rather than relying on traditional methods that rely on physical artifacts or local community activities. Using the website medium, *Jawafriend.org* offers an easily accessible preservation model that is open, interactive, and available to youths as well as a broader worldwide audience, matching views to maximize engagement through integration of technology with culture keeping for attaining a complete understanding of cultural heritage (Barone, 2024; Tan et al., 2024). Digital platforms are part of that significant development in the transformation of cultural preservation driven by globalization. Previous studies have examined the functions of online media in documenting and disseminating cultural narratives and in strengthening the sustainability of local identities amid global change (Datta et al., 2024; Zainuddin, 2023). Therefore, *Jawafriend.org* creates an interactive space that renders Javanese history and tradition vivid through cultural maps, quizzes, and visual storytelling. Users can sit at the table to discuss, interact, and articulate what should be changed, improved, or added; the sense of ownership developed here fosters buy-in to advance the culture (Sesana et al., 2020).

This study also addresses the research gap that digital media have not been developed to highlight Javanese culture in an interactive educational format. Most documentary-based preservation attempts do not fully incorporate participatory pedagogical principles. *Jawafriend.org* provides a means toward this end, offering educational value while being developed through an engaging digital approach. Historical timelines, arts, houses, and practices content for the site are developed in a multimedia format and presented to enhance the learning experience. Multimedia can enhance understanding and retention of knowledge in educational contexts, particularly when cultural considerations are taken into account. This responds to one of the effects of globalization, the sociological disintegration of local cultural identity, by presenting a virtual form representing a Javanese cultural narrative. In theory, such a form can function as an act responding to a homogenizing culture. This grand narrative, infused with local content, can revive cultural resilience amid the dynamics of modernization (Çeken & Taşkın, 2022). This is achieved by preserving traditional forms while innovating their use, so that Javanese culture remains applicable in times of rapid social change, since social change must be followed by cultural change. The hybrid theory sees culture as a process, interactive and dynamic, formed through exchange. From a digitalization perspective, Javanese culture should not be regarded as mere heritage but rather as a living process that evolves. This aligns with the perspective of cultural sustainability, which emphasizes the need for diversity in contemporary societies (Geçikli et al., 2024).

Digital techniques are participatory, involving the local community in documentation and verification to ensure that the cultural representation remains accurate. Thus, *Jawafriend.org* also emerges as a process innovation that integrates digital technology with traditional

Javanese values. It is not only developed as a platform for documentation but also for education and collaboration to build public awareness, appreciation, and participation in the conservation of their culture. Also, this study aims to advance both theory and practice in efforts to preserve culture through technology while building cultural literacy among Indonesia's young people as they shape global trends.

LITERATURE REVIEW

Cultural Preservation in the Context of Globalization

Culture is the shared values, beliefs, practices, language, customs, art, and music of a particular group of people. Culture is integral to human existence, as it shapes an individual's identity and way of life. Globalization refers to the dynamic process by which economies, societies, and cultures are integrated through communication, trade, and technology. Globalization reflects the rapid exchange of knowledge and trends, information sharing, the liberalization of trade policies between countries, and technological advances in transportation and mass communication. Cultural preservation refers to the maintenance, care, and reinterpretation of cultural values to ensure their continued relevance to evolving social dynamics. Cultural preservation is not about preserving original forms but about maintaining the cultural meaning and identity that can be sustained amid ongoing social change (Amelia et al., 2025; Saputra et al., 2024).

Cultural heritage has excellent value and is also a process for the formation of collective national identity. This dual role will form an important analytical basis for this research. Globalization flows ever more rapidly, facilitating the exchange of information, increasing mobility, and strengthening cross-cultural contacts. It offers significant opportunities for cultural development but also threatens the sustainability of local cultures. Thus, the development of information technology has necessitated adjustments and even the renewal of cultural preservation strategies to make them relevant to the current context. Cultural preservation does not occur by keeping old forms isolated from the dynamics of society and technology. Cultural preservation becomes a process of constant bargaining between native traditions and new elements introduced by modernization (Mendoza et al., 2023). Building on this idea, the adaptive preservation concept developed a preservation approach that sustains the value, meaning, and essence of culture while being realized through new media and forms appropriate to contemporary life. It enables culture to remain alive, develop, and be meaningful to the current generation amid the rapid pace of modernization (Siliutina et al., 2024).

Digital Transformation and the Concept of Adaptive Preservation

Digital transformation has fundamentally changed how humans comprehend and relate to cultural heritage. Multiple innovations, such as digital storage, interactive multimedia, virtual reality, augmented reality, and metaverse technology, are emerging tools for documenting and revitalizing cultural values. The application of immersive technology enables learners to explore virtual cultural environments, thereby building understanding through empathy and direct experience (Tan et al., 2024). However, metaverse-based preservation applications can reconstruct both tangible and intangible cultural heritage in an interactive, dynamic

three-dimensional space. However, metaverse-based preservation applications can reconstruct tangible and intangible cultural heritage in an interactive, dynamic three-dimensional space (Buragohain et al., 2024).

In the process of digitalization, audiences do not adopt a passive stance toward receiving cultural information through analog narratives; instead, they actively participate in constructing cultural meaning. Refers to as edutainment, by which education is entertaining, such that cultural consciousness could develop out of attractive and fun learning situations (Abounaga, 2024). Digitalization provides wider and more inclusive access to culture. Harry, in his book titled *"The Impact of Hybrid Learning Models and Digital Literacy on Student Engagement and Performance"* states that Digital learning environments can sustain cultural identity through reflective and participatory interaction. Integrating technology- and culture-based learning is a highly appropriate element for making pedagogical design contextual to the time, particularly in Indonesian education (Patras et al., 2023). Therefore, the digital world is not a cultural repository it has become a learning ecosystem that extends the meaning of cultural preservation.

Preservation of Digital Culture in Indonesia and the Context of Javanese Culture

Indonesia's digital transformation presents significant opportunities to preserve local culture, particularly Javanese culture, which is rich in artistic values and life philosophies rooted in the oral tradition. The community could use narratives to digitize oral traditions in efforts to enhance cultural awareness among the younger generation (Odularu et al., 2024). Supported by the opinion that game-based learning applications and models, gamification, make contextual learning to instill the values of the Javanese language, art, and culture in students (Ori & Susianti, 2024). This is particularly interesting, given claims about increasing digital literacy among Indonesian students as an excellent opportunity to incorporate unique content into the current learning system (Nasution, 2024). Visual communication and typography are also instrumental in dynamically sustaining cultural identity. For example, the digitization of Javanese script enables the preservation of cultural icons as linguistic heritage and their visual realization within modern frames. Therefore, digital social mapping is a participatory preservation model that involves direct community involvement in documenting and retelling cultural heritage. The sustainability of local knowledge is crucial to ensure that, amidst the rapid pace of digitalization, cultural roots are not lost (Ajani et al., 2024). This demonstrates that digital cultural preservation in Indonesia extends beyond documentation to encompass education, collaboration, and community participation.

Theoretical Basis: Adaptive Preservation and Experiential Learning

This study builds on two major theories: adaptive preservation theory and experiential learning theory. In the dynamic preservation mechanism, culture is understood as an ever-renewing process across space and time, shaped by the interplay of creativity and tradition. Cultural preservation, consequently, should be adaptive and pluralistic, encompassing not only the protection of established forms but also avenues for community innovation in reinterpreting cultural heritage. This thinking is reinforced by research emphasizing that cultural preservation must dynamically open up various old forms to reinterpretation

alongside social and technological developments (Siliutina et al., 2024). Kolb stated that education develops through four interrelated stages: concrete experience, reflection, conceptualization, and active experimentation. In cultural education, this model underpins the idea that one learns not only cognitively but also through affective experience and practical engagement. Gamification of digital media motivates learning by leveraging elements to foster experiential learning, thereby making understanding of cultural values more accessible (Moseikina, 2023). Advancing the fact that virtual reality-based games would be used for direct, dynamic cultural learning experiences. Previous research has shown that digital preservation projects involving users can enhance deeper engagement with culture (Lian & Xie, 2024; Wang et al., 2024). From these theories, it is evident that cultural preservation has shifted from conservatism toward an adaptive learning process that enables youth to dynamically experience, apprehend, and reinterpret Javanese culture in the age of digitization and globalization. Under such a framework, JawaFriend.org becomes not only a documentation medium but also a learning environment that integrates digital technology with education and cultural reflection, thereby fostering awareness and the community's actual participation in cultural preservation.

METHODS

This study applies the Analysis, Design, Development, Implementation, and Evaluation (ADDIE) model as a sequential framework for developing Website-Based Learning Media on Javanese Culture Preservation (JawaFriend.org). The analysis phase of this study is based on the need to preserve Javanese culture in the digital era. It includes a literature review, observations, and analyses of users, comprising students and the general public. Results from analyses indicate a pressing need for engaging and interactive digital learning media that instill cultural values among youth in ways that align with their characteristics.

The design phase comprises content structuring, website interface design, and selection of multimedia elements. The content was developed using interactive maps, cultural quizzes, visual stories, and information on the arts in Javanese houses and dress, as well as on principal houses. Constructivism-based design principles enable users to learn actively through exploration. A prototype of the website was developed using interactive platforms and graphic design software, including Canva and Genially.

Collaboration at this stage of the development process involves an exchange between an expert in cultural matters and a learning media specialist to assess the appropriateness of content and the visual quality. This phase is followed by product testing with a limited user group to examine the functionality and usability of the developed media. Selected users conducted the testing process to identify technical issues and user experience during initial implementation. Subsequently, the study proceeded to an evaluation phase comprising validity and practicality testing conducted by three experts in media, language, and instructional materials. The validity test assessed the appropriateness of content accuracy, presentation, and instructional design, while the practicality test assessed ease of use, usefulness, and media attractiveness. The data obtained from these evaluations informed the refinement of JawaFriend.org, ensuring its suitability as an adaptive and sustainable cultural learning platform.

RESULTS AND DISCUSSION

The Design phase of the Jawafriend.org website focused on conceptualizing and developing the visual identity, character system, narrative voice, and digital components that would shape and inform the site's pedagogical and aesthetic experience. In carrying out its principal mission as an educational portal, this site also acts as a cultural envoy for Javanese identity, all visual and textual elements must evoke cultural authenticity. Hence, the project began with the development of a digital mascot, a culture-based main character, to serve as a narrative guide across touchpoints throughout the user journey. A young, friendly, wise male was proposed to be named "Javo" (for males only at this moment) to symbolize traditional Javanese values mixed with modern curiosity. These characters wear traditional Javanese *beskap* and *kebaya* but are rendered in a cartoon-anime fusion style to make them more relatable to younger audiences (see **Figure 1**).



Figure 1. Mascot Design "Javo"
Source: Jawafriend.org

The development phase is the concrete realization of conceptual design plans into fully functional digital products accessible to users. The creation of the Jawafriend.org website is where ideas move from abstraction to their tangible, digital form. This involves character illustration, user interface design, and navigation systems, as well as narrative content and interactivity, all integrated into a WordPress-based platform. Simplicity, Accessibility, and the richness of local cultural values are thus strengthened by mutually supportive design and content, which serve as the principles guiding the development of this product. Among the best features developed on the Jawafriend.org platform is 'Java Island Map,' an interactive media piece created in Genially to present the geographical diversity of Java's cultures. Among other uses, it has been employed as a gateway through which users (particularly students) interact with and learn about Javanese culture through active, visual engagement (see **Figure 2**).

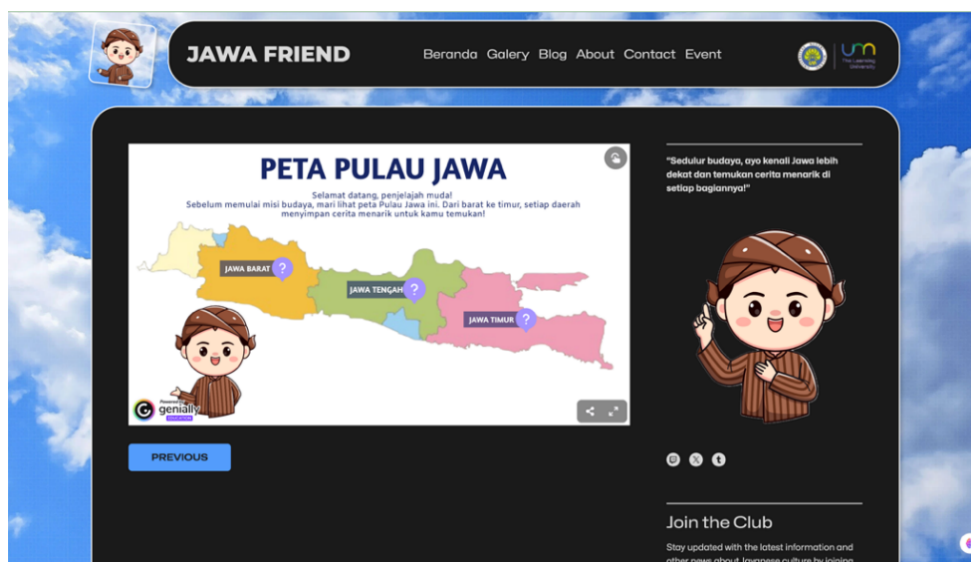


Figure 2. Javanese Cultural Adventure and Exploring Java with Javo
Source: *Jawafriend.org*

The "Javanese Cultural Adventure and Exploring Java with Javo" are two interactive learning components designed to increase user engagement through exploration-based learning experiences and gamification. These were material outputs of the Genially platform, aligned with digital storytelling and experiential learning to preserve Javanese culture. The "Exploring Java with Javo" feature is a section in which users follow an adventure storyline: the main character, Javo, is on a quest to recover lost artifacts from Javanese cultural heritage. A feature that presents narratives such as "Ready to help me find the artifacts hidden in each region?" fosters a game-like educational atmosphere, combining curiosity with cultural responsibility. Users would need to complete challenges in every region of Java to reclaim the strewn cultural symbols across all regions, thereby strengthening problem-based learning aspects of this approach while boosting students' intrinsic motivation (see **Figure 3**).

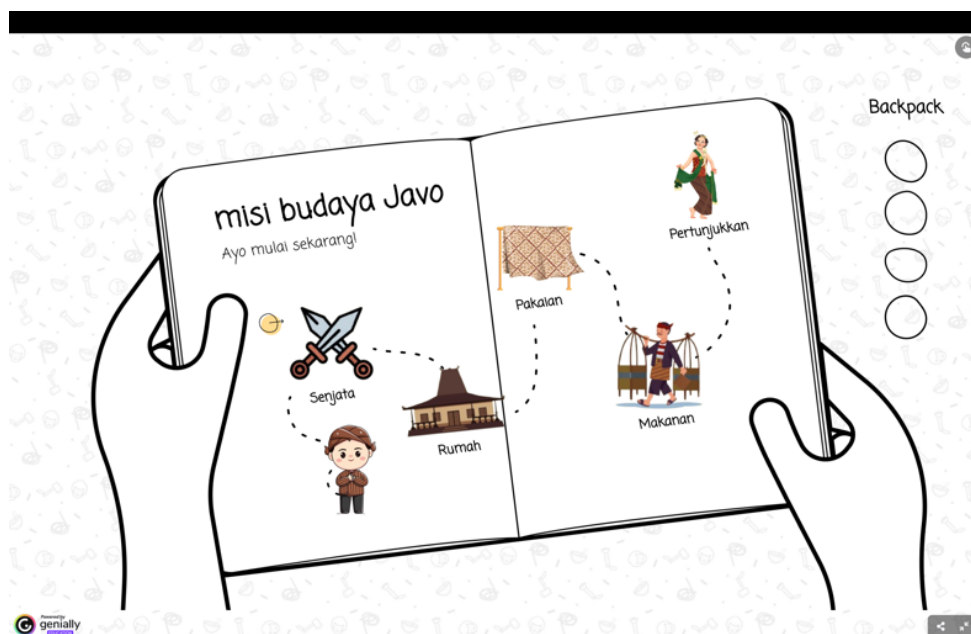


Figure 3. Javanese Cultural Mission
Source: *Jawafriend.org*

The feature "Javanese Cultural Adventure" enables users to map and narrate the principles and beliefs of the Javanese people. There are specific exploration pointers that, when discovered, reveal a particular narrative involving culture, art, or rituals. A visually dramatic yet reflective cultural journey is introduced through illustrations and navigational elements that serve as access points to multimedia content. It therefore shifts education about JawaFriend.org from a passive information repository to an active learning site. This raises digital participation as a model for conserving culture, in which it not only documents Javanese heritage but also brings that heritage to life through interactive experiences that align with today's preferred learning methods among the digital generation (see **Figure 4**).



Figure 4. Javanese Cultural Adventure
Source: JawaFriend.org

The visual and short-textual presentation on JawaFriend.org shares classical cultural elements with users, such as wayang (wayang puppets), joglo houses, gamelan, batik, and symbolic philosophies that shape Javanese identity. These presentations are included in the Microlearning content, where illustrations are contextualized with informative yet straightforward explanations to make learning attractive to children. Wayang is discussed, for instance, not only as entertainment but also as a means of moral education and reflection on life values. The joglo house is discussed through its spatial philosophy, the harmony of humans with nature and God, while Gamelan represents togetherness and balance in Javanese musical expression. This demonstrates that some parts do not exist independently but are embedded within a broader value system. It employs contextual learning by using cultural visualizations as a medium for conveying concepts. Students may learn about culture by observing its forms, symbols, and social functions without reading long texts. Its design is also responsive and interactive, supporting curiosity-based independent learning. The "Fun Fact" time is very instrumental in the actualization of the digital cultural literacy strengthening program between formal and non-formal learning paths because, here, knowledge about culture can be exposed visually, thereby bringing interest and fostering

love for Javanese heritage while proving that traditional wisdom can be interpreted attractively in this modern technological age.

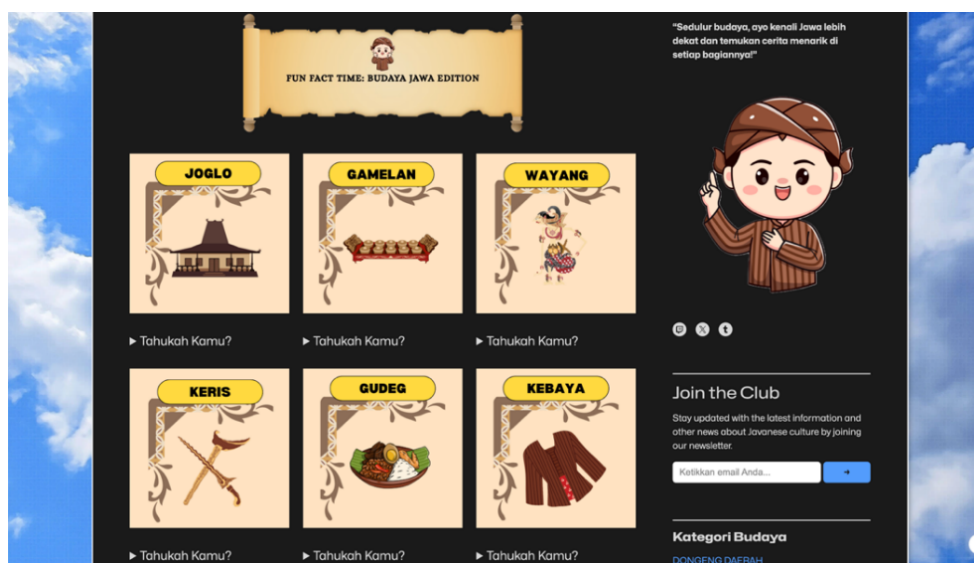


Figure 5. JawaFriend.org is "Fun Fact Time"
Source: JawaFriend.org

The Javanese Culture Quiz is an interactive, integral component of the JawaFriend.org platform, designed to assess and deepen users' understanding of Javanese culture through game-based learning pathways (see **Figure 5**). It is created in Canva as an interactive visual design medium that integrates assessment through multiple-choice questions, image quizzes, and quick quiz options. The "Javanese Culture Quiz" feature demonstrates that cultural preservation need not be boring or merely a textual technology integration; the educational game approach offers an active, engaging, and experiential way to teach culture by applying this model at JawaFriend.org. In this respect, the study of that culture's heritage can be interactive and practical even in digital spaces, rather than a passive act of acquiring knowledge about it. The creation of this feature defaults to making learning reflective yet engaging, so that content is assessed for what one knows rather than merely consumed for its intellectual content. Queries may delve into art, language, and traditional architecture, or the philosophy of life of the Javanese people. Therefore, this related feature can serve as an agent to assess and strengthen cultural literacy. This feature applies to pedagogy through the principle of assessment as learning, whereby assessment is not an end in itself but an integral part of the learning process. Results are presented immediately, with a brief explanation, thereby creating a feedback loop that fosters more profound understanding. The visual aesthetic of this quiz is dynamic, featuring batik colour palettes and traditional elements adapted to a modern style, thereby enhancing relevance for young digital users.

The next step was validity and practicality testing, conducted by three validators: a media expert, a linguist, and a content expert. The assessment used a four-level scale (1–4) and was converted to percentages. The summary of the assessment results is presented in **Table 1** below. The trial results indicate that the learning media content has a validity of 91%, placing it in the Very Valid category, indicating that its content, language, and visual aspects meet the objectives of cultural learning. The practicality level of 92% indicates that this medium is highly visually appealing, easy to use, and supports effective learning.

Table 1. Results of the Validity and Practicality Test of Jawafriend.org Product

Type of Test	Media Validator (%)	Language Validator (%)	Content Validator (%)	Average (%)	Category
Validity	94	88	90	91%	Very Valid
Practicality	93	91	92	92%	Very Practical

Source: Research, 2025

The three validators stated that Jawafriend.org is suitable for implementation as a digital learning media based on Javanese culture because it integrates education, interactivity, and culture on a single platform. This product can advance the preservation of local culture through an educational technology approach that is contextual and responsive to the needs of the younger generation.

Discussion

The development stage identified in this study aligns with and reinforces prior research on digital cultural learning media. The identification of user needs and the urgency of preserving Javanese culture support in the analysis stage must begin with a clear understanding of learner characteristics to ensure relevance and engagement. The study results indicate that the Jawafriend.org learning media have a validity of 91% and a practicality of 92%. Both are under excellent categories. This also demonstrates that the content, display, and interactive functions meet the needs of culture-based learning. Success in this area supports prior research on the spatial integration of information technology and cultural education, which not only expands access to cultural heritage but also creates participatory spaces for young people to experience and reinterpret their local identities (Ott & Pozzi, 2011). In the design and development stage, the integration of interactive maps, gamification quizzes, and narrative-based exploration aligns with research indicating that multimedia and gamification elements constitute cultural content (Dichev & Dicheva, 2017; Rosyiddin et al., 2023; Wang et al., 2024).

High validity also indicates that the web-based development of Jawafriend.org adheres to the principles of pedagogical relevance and design consistency. Digital learning media designed to involve users, as well as gamification principles, increase students' learning motivation and conceptual understanding of cultural material (Galindo-Durán, 2025; Haryanti et al., 2023; Ilin, 2022). The use of interactive maps, educational games, and cultural narratives on the Jawafriend.org website fosters both cognitive and affective development among students through contextual digital exploration.

It may be said that the preservation of culture no longer depends solely on traditional channels for transmitting values and knowledge. As stated, digital tools enable cultural heritage to be "brought back to life" through visual, audio, and narrative interactions presented in environments suited to the learning preferences of contemporary learners (Di Paola et al., 2019; Wang et al., 2024). This is further supported by research demonstrating that digital heritage preservation projects are effective only when they involve users in actively creating shared meaning, as shown by the "Javanese Cultural Adventure" feature on

the Jawafriend.org platform (Lian & Xie, 2024). However, the validation results also indicate that it still requires improvement in image labeling and in the use of academic references. This finding is supported by studies emphasizing that accurate documentation and source credibility are crucial for avoiding the potential distortion of cultural information on any digital preservation platform (Khan, 2024; McEwen & Cscoba, 2025). These outputs generally indicate that Jawafriend.org has developed a learning concept that is not only reflective but also participatory and informative by blending local cultural values with digital innovation (De Paolis et al., 2022).

Compared with previous research that emphasized cultural documentation in digital formats, Jawafriend.org offers an adaptive preservation model that integrates educational, participatory, and interactive elements. This approach aligns with the adaptive conservation framework, which views culture as a dynamic process that requires digital innovation to remain relevant to younger generations (Kiefer et al., 2021; Siliutina et al., 2024). Through the integration of exploration-based learning, cultural gamification, and micro-content, this research extends prior studies by demonstrating how the stages of the ADDIE model can be optimized to produce more engaging and sustainable cultural learning media. Overall, the development stages identified in this study not only align with previous research but also strengthen the empirical basis for the effectiveness of digital interactive platforms in preserving local culture. This confirms that the combination of pedagogical design, multimedia creativity, and cultural values can produce a more adaptive and participatory model of cultural preservation.

CONCLUSION

This study developed a web-based learning tool, Jawafriend.org, to preserve Javanese culture amid advances in digital technology. Using the ADDIE model with modifications, this study developed a learning site that integrates ancient cultural values with interactivity to appeal to the younger generation. The medium met the research goals, as expert ratings indicate high validity and practicality, making Jawafriend.org appropriate for use as a fun cultural learning tool. The study's significant findings indicate that the use of maps, quizzes, and multimedia narratives as interactive components may enhance and deepen cultural-level understanding. Jawafriend.org is not only a medium for documentation but also a participatory learning environment that encourages users to explore, reflect, and engage in active learning about Javanese culture. This results from adaptive cultural preservation that continues to deliver core cultural values through presentations relevant to contemporary development. As a result, Jawafriend.org could be used as an alternative learning medium to revive local culture through educational technology. The results of this research show that the combination of new creative digital approaches and the preferences of younger generations preserve more culture.

AUTHOR'S NOTE

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