

Research Article

Innovative Strategies for Preserving the Javanese Language Among Youth: Integrating Digital Technology and Multicultural Education in the Postmodern Era

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Abstract: The Javanese language is facing a critical decline among younger generations due to the accelerating forces of globalization and digitalization. This study investigates the current landscape, contributing factors to language attrition, and proposes innovative strategies for language preservation through the integration of digital technology and multicultural education within a postmodern context. Employing a Systematic Literature Review (SLR), the study synthesizes findings from 20 high-quality articles selected from an initial pool of 156 publications spanning the years 2019 to 2024. The results reveal that 40% of existing research emphasizes digital technology, with five primary causes of language decline identified: the dominance of digital media, weak intergenerational transmission, misaligned pedagogical approaches, social stigma, and the pervasive impact of globalization. Effective strategies include the promotion of digital literature, audiovisual learning media, digital learning platforms, and interactive storytelling. The study culminates in a Holistic Integration Model comprising five interrelated pillars: adaptive digital technology, transformative education, popular culture communities, regulatory policy frameworks, and continuous monitoring and evaluation. These components collectively support the development of a sustainable ecosystem for Javanese language revitalization.

Keywords: Javanese Language Preservation, Youth Engagement, Digital Technology, Educational Strategies, Cultural Heritage

1. Introduction

The Javanese is one of Indonesia's most vital cultural assets, reflecting the richness of local wisdom and national identity. As the regional language with the largest number of native speakers in the country, Javanese plays a strategic role in preserving the cultural diversity of the nation (Indonesia, 2024). However, amid the rapid currents of globalization and digitalization, the existence of the Javanese language is under serious threat, particularly among the younger generation. The decline in Javanese language use among youth is not only a linguistic concern but also a reflection of a broader cultural identity crisis (Ratnawati, 2024).

The preservation of regional languages, particularly Javanese, is a multidimensional challenge involving social, cultural, and educational factors. From a philological standpoint, efforts to preserve ancient manuscripts represent a critical way to safeguard ancestral heritage and serve as a medium for language

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revitalization. Additionally, everyday community activities, such as neighborhood meetings that utilize formal Javanese (Krama), demonstrate the importance of grassroots-level engagement in sustaining the language (Untari, 2021). Effective preservation strategies require active involvement from communities, as seen in the case of Nage village in East Nusa Tenggara, where local language survival has been supported through both formal and informal education, along with local government backing (Indonesia, 2024).

Today's youth, widely regarded as digital natives, are exhibiting alarming tendencies in their disconnection from regional languages. A study in North Maluku Province reported that many young people rarely use their local languages in educational or social settings, classifying them as weak users of their own linguistic heritage (Aritonang, B. 2021). This situation is worsened by a growing preference for using Indonesian or simplified forms of Javanese that are seen as more modern and easier to use, rather than the more refined levels of the language that require understanding complex speech hierarchies (Ratnawati, 2024).

The emergence of the Fifth Industrial Revolution, marked by the integration of artificial intelligence, the Internet of Things, and big data, presents both challenges and opportunities for regional language preservation (Pendidikan & Jawa, 2021). Digital technology can offer relevant and sustainable solutions. For example, one program that used digital literacy to support language preservation successfully increased participants' skills from 30 percent to 85 percent following training (Sahidin et al., 2023). Digital platforms, educational applications, and social media channels provide accessible and engaging ways to promote the Javanese language among youth (Oliviatika et al., 2024). Audiovisual media have proven particularly effective in Javanese language instruction due to the familiarity of digital devices among young learners (Taqiyah et al., 2023).

In Indonesia's multicultural context, preserving regional languages also requires an approach that embraces ethnic and cultural diversity. Studies have shown that youth from diverse ethnic backgrounds, such as those in North Maluku, face specific challenges in maintaining their local languages (Aritonang, 2021). Multicultural education approaches should account for cross-cultural interactions and use technology as a unifying tool that bridges differences and supports inclusive learning environments (Oliviatika et al., 2024).

The postmodern era has transformed how societies perceive culture and language. It is characterized by skepticism toward central authority, universal narratives, and linear history (Buchari, 2020). In the Indonesian context, postmodern perspectives have led many cultural practitioners to question traditional frameworks of nationalism as the sole measure of cultural identity. This shift has created space for new and innovative strategies to preserve regional languages that are no longer tied to conventional paradigms (Lestari et al., 2024).

The convergence of Javanese language preservation, youth identity, digital technology, multicultural education, and postmodern perspectives forms a complex and dynamic ecosystem. Generation Z, raised in a digital environment, faces significant challenges in maintaining their linguistic and cultural roots amid global influences and the dominance of foreign cultures (Arfianingrum, 2024). However, by embedding Javanese culture into the digital ecosystem and fostering active youth participation, preservation efforts can become more meaningful and relevant. Revitalizing regional languages in today's world calls for a synergy between tradition and innovation. While technology can expand access to language learning, its effectiveness ultimately depends on the integration of local cultural values into digital content and pedagogy (Olivatika et al., 2024).

This complex context raises several fundamental questions. What is the current state of Javanese language use among youth? What are the key factors contributing to the decline of interest in the language? What innovative strategies can be implemented to preserve Javanese through digital means and multicultural education? And how effective is the integration of digital technology in preserving the Javanese language in the postmodern age?

This study aims to analyze the current use of the Javanese language among young people, identify the factors behind its declining relevance, formulate innovative preservation strategies by integrating digital technology and multicultural education, and assess the effectiveness of these strategies in the postmodern context (Kamal et al., 2023).

The significance of this study lies in its contribution to developing a comprehensive model for regional language preservation that brings together technological innovation, multicultural education, and postmodern insights. Theoretically, the study enriches the body of knowledge on language revitalization in the digital era (Fardani, Pratiwi, et al., 2023). Practically, it offers actionable strategies for educators and cultural stakeholders. From a policy perspective, it provides informed recommendations for developing responsive language preservation policies aligned with the characteristics of the digital generation and contemporary socio-cultural dynamics (Fardani, Rohmah, et al., 2023).

2. Research Method

2.1. Research Design

This study employed a Systematic Literature Review (SLR) approach to examine innovative strategies for preserving the Javanese language among youth through the integration of digital technology and multicultural education in the postmodern era (Senja Kurniawan et al., 2023). The SLR method enables a comprehensive synthesis of previous studies, allowing the identification of research gaps, patterns of findings, and the formulation of evidence-based strategies (Puspita et al., 2024).

2.2. Data Sources and Search Strategy

The literature search was conducted systematically across various academic databases, including:

- 1) International Databases: Scopus, Web of Science, ProQuest, JSTOR
- 2) National Databases: Portal Garuda, Indonesia OneSearch, Neliti
- 3) Institutional Repositories: University repositories across Indonesia
- 4) Specialized Journals: NUSA Journal, Journal of Language and Literature Education

The following keywords were used in both Indonesian and English:

- ("bahasa Jawa" OR "Javanese language") AND ("pelestarian" OR "preservation" OR "revitalization")
- ("generasi muda" OR "young generation" OR "youth") AND ("teknologi digital" OR "digital technology")
- ("multikultural" OR "multicultural") AND ("post-modern" OR "postmodern")

The data set included meta-analysis results based on a relatively small cumulative sample of 93 respondents from two main studies (UB Repository and NUSA Journal). To ensure greater validity, future research is encouraged to collect primary data from larger and more diverse populations.

2.3. Inclusion and Exclusion Criteria

2.3.1. Inclusion Criteria

- 1) Research articles published between 2019 and 2024
- 2) Studies focusing on the preservation of Javanese or other regional languages
- 3) Research involving youth aged 15–35 years
- 4) Articles discussing the use of digital technology in language preservation
- 5) Written in Indonesian or English
- 6) Peer-reviewed and accessible in full-text

2.3.2. Exclusion Criteria

- 1) Opinion pieces or editorials without empirical data
- 2) Studies not directly discussing language preservation
- 3) Purely linguistic research without educational or cultural context
- 4) Articles that were not available in full-text

The selection of this timeframe was based on three key considerations: the significant acceleration of digital transformation post-COVID-19, the rapid development of digital education technologies, and the emergence of Generation Z as the dominant demographic in language preservation discourse.

2.4. Article Selection Procedure

The article selection process followed a structured and rigorous approach to ensure the inclusion of high-quality and relevant studies. It was conducted in three distinct stages: initial screening of titles and abstracts, full-text

evaluation, and methodological quality assessment. The detailed breakdown of each stage is presented in Table 1.

Table 1. Article Selection Process

Stage	Description	Number of Articles
Stage 1: Title and Abstract Screening	Initial search across databases. After removing duplicates, screening based on titles and abstracts.	156 identified → 118 unique → 45 relevant
Stage 2: Full-Text Review	Full-text evaluation of the 45 articles using inclusion and exclusion criteria.	28 eligible articles
Stage 3: Quality Assessment	Evaluation of methodological quality and relevance to research questions.	20 high-quality articles

2.5. Data Analysis Techniques

A combination of qualitative and quantitative techniques was used to analyze the selected studies. These methods aimed to uncover research trends, extract thematic insights, synthesize empirical findings, and evaluate the effectiveness of preservation strategies. Table 2 outlines the four main analytical techniques applied in this study.

Table 2. Data Analysis Techniques

No	Technique	Description
1	Bibliometric Analysis	✓ Mapped research trends in Javanese language preservation (2019–2024)
		✓ Identified influential authors and leading institutions
		✓ Analyzed keyword co-occurrence to uncover dominant themes
2	Thematic Analysis	✓ Applied inductive coding to identify recurring themes
		✓ Categorized preservation strategies based on educational or technological orientation
		✓ Synthesized findings to build a theoretical framework
3	Meta-Synthesis	✓ Aggregated quantitative findings from empirical studies
		✓ Used triangulation to validate interpretations
		✓ Identified gaps and future research directions
4	Content Analysis	✓ Reviewed the implementation of preservation strategies
		✓ Evaluated the effectiveness of digital-based approaches
		✓ Classified best practices in language preservation

2.6. Validity and Reliability

To ensure the robustness of the review, the study applied several strategies:

- 1) Inter-rater reliability through independent screening and coding by two reviewers
- 2) Transparency in documenting the search and selection processes
- 3) Systematic procedures aligned with PRISMA guidelines for SLR reporting
- 4) Quality appraisal using standardized evaluation criteria

2.7. Limitations

This study acknowledges several limitations:

- 1) The review was limited to literature in Indonesian and English
- 2) The geographic focus was primarily within the Indonesian context
- 3) There was a potential for publication bias, favoring significant findings
- 4) The methodological heterogeneity across reviewed studies could affect comparability

Despite these limitations, the systematic review offers a comprehensive synthesis of current knowledge on Javanese language preservation. It provides a valuable evidence base for formulating innovative and adaptable strategies in future educational and cultural initiatives.

4. Results and Discussion

4.1. Results of the Systematic Literature Review

Based on the SLR process, a total of 156 articles were initially identified. After a multi-stage screening and quality assessment, 20 high-quality articles were selected that met all inclusion criteria. These studies were published between 2019 and 2024 and address various dimensions of Javanese language preservation among youth.

The thematic focus of the selected articles is summarized in Table 3.

Table 3. Distribution of Articles by Research Focus

No	Research Focus	Number of Articles	Percentage
1.	Use of Digital Technology	8	40%
2.	Community-Based Preservation	5	25%
3.	Factors Contributing to Language Decline	4	20%
4.	Educational Approaches	3	15%

4.2. Current Condition of Javanese Language Use Among Youth

The literature reveals a concerning decline in the use of the Javanese language among younger generations. A study conducted by (Puspita et al., 2024) in North Sumatra reported a significant downward trend in Javanese usage among youth. Similar findings were observed in studies focusing on Generation Z, indicating that digital-native youth face major challenges in sustaining the language and cultural

heritage of Javanese in the context of globalization and foreign cultural dominance (Arfianingrum, 2024).

Research on youth community groups (*karang taruna*) suggests that despite active preservation initiatives, many adolescents struggle to use the Javanese language in accordance with expected social etiquette. This situation is further exacerbated by an identity crisis in Generation Alpha, as found in a case study at SDN Modong in Tulangan Subdistrict, where the use of refined Javanese is diminishing (Pendidikan & Jawa, 2021).

4.3. Factors Influencing the Decline of Javanese Language Use

Based on the literature synthesis, five major factors contribute to the decline of Javanese language use among younger generations:

4.3.1. Digital Technology and Media Dominance

Digital platforms, social media, and mainstream content overwhelmingly favor the use of Indonesian or English. As a result, Javanese is increasingly excluded from daily digital communication. According to (Siregar et al., 2025), the dominance of non-local language media significantly reduces young people's exposure to Javanese, making it less accessible and less relevant in contemporary contexts.

4.3.2. Weak Intergenerational Language Transmission

The intergenerational transmission of Javanese has weakened considerably, especially in urban and mixed-ethnicity households. Many parents no longer prioritize speaking Javanese at home, often opting for Indonesian to facilitate educational success and social mobility. This breakdown in linguistic continuity poses a critical threat to long-term preservation (Siregar et al., 2025).

4.3.3. Educational and Pedagogical Challenges

Javanese language education, particularly within formal school settings, faces several pedagogical issues. Traditional teaching methods are often perceived as outdated and fail to engage digital-native students. The lack of interactive or technology-enhanced materials contributes to low motivation and limited proficiency (Pendidikan & Jawa, 2021).

4.3.4. Social Stigma and Negative Perception

Many young people perceive Javanese as difficult, old-fashioned, or irrelevant. This stigma is shaped by peer influence and societal narratives that privilege global or national languages over local vernaculars. The belief that Javanese has little practical value in modern life further discourages its use (Taqiyah et al., 2023).

4.3.5. Globalization and Cultural Lifestyle Shifts

Global media consumption patterns and the increasing adoption of modern lifestyles among youth contribute to the erosion of local language practices. Exposure to dominant global cultures through entertainment, fashion, and social networking platforms accelerates language shift and detachment from regional identity (Arfianingrum, 2024).

4.4. Innovative Strategies for Javanese Language Preservation through Digital Technology

The review identified a range of innovative strategies that leverage digital technology to support Javanese language preservation. These approaches have shown effectiveness in engaging younger audiences and revitalizing interest in the language.

4.4.1. Development of Javanese Digital Literature

The integration of Javanese language into digital literary formats has proven successful in increasing youth engagement. A study by Afdholy and Hidayat found that the use of digital storytelling and literature significantly enhanced students' interest and motivation to use Javanese in everyday communication (Afdholy & Hidayat, 2024). The inclusion of both textual and multimedia elements added interactive value, making the learning process more enjoyable and culturally immersive.

4.4.2. Use of Audiovisual Learning Media

Audiovisual media, such as videos, animations, and digital presentations, have become powerful tools in language instruction. Research in Islamic elementary schools (Madrasah Ibtidaiyah) demonstrated that audiovisual materials improved comprehension and learner satisfaction (Taqiyah et al., 2023). These tools align with the cognitive styles of today's students, who are more responsive to visual and auditory input than to traditional printed texts.

4.4.3. Implementation of Digital Learning Platforms

The use of online platforms for structured language instruction has expanded access to Javanese learning materials. For instance, the BeSmart platform was found to be effective in delivering modular content on Javanese language and culture. This technology-enabled solution also facilitates student-centered learning and promotes self-paced exploration (Arivani, 2024).

4.4.4. Digital Storytelling Programs

Digital storytelling initiatives have been particularly effective in early childhood education. A study conducted at KB Nurul Ilmi Plumbungan found that interactive digital storytelling sessions significantly improved children's understanding and usage of Javanese (Ratnawati, 2024). This method also encouraged emotional engagement and parental involvement, making language learning more holistic.

4.5. Multicultural Education Approaches in Language Preservation

In the context of Indonesia's rich ethnic diversity, multicultural education plays a crucial role in the preservation of regional languages, including Javanese. The literature emphasizes that language revitalization efforts must be sensitive to the realities of heterogeneous communities where multiple cultural and linguistic identities coexist.

A study in North Maluku, for instance, revealed that youth from various ethnic backgrounds encounter unique challenges in maintaining their ancestral language (Aritonang, B. 2021) . In such settings, promoting one regional language requires inclusive strategies that do not marginalize other groups. Multicultural education offers a constructive framework for addressing this complexity.

Several strategies grounded in multicultural values have been identified:

- 1) Integrating Javanese into inclusive education systems, where the language is not only taught as a subject but also embedded in broader school activities and cross-cultural learning experiences.
- 2) Utilizing digital media as intercultural bridges, enabling students from different ethnic backgrounds to access and appreciate Javanese culture through multilingual and multimedia content.
- 3) Strengthening community-based cultural initiatives, such as cultural exchange programs, youth mentoring between generations, and local festivals that celebrate linguistic diversity and foster pride in local heritage.

By promoting appreciation for diversity and mutual respect among learners, multicultural education not only supports language preservation but also strengthens national cohesion and social harmony. Technology serves as a critical enabler in this process, allowing multicultural content to be distributed widely, interactively, and accessibly across geographical and cultural boundaries (Fardani & Wiranti, 2019)

4.6. Effectiveness of Preservation Strategies in the Postmodern Era

In the postmodern era, traditional frameworks for cultural and linguistic preservation are increasingly being redefined. The rejection of centralized authority, grand narratives, and linear historical progression creates both challenges and opportunities for revitalizing local languages. Within this evolving cultural landscape, Javanese language preservation must adapt to new paradigms that emphasize flexibility, innovation, and participation across multiple levels of society.

4.6.1. Digital Technology as an Enabler

Digital technology has emerged as a powerful enabler of Javanese language revitalization. Tools such as mobile apps, e-learning platforms, and virtual storytelling spaces have made the language more accessible, especially for younger generations who are digital natives. Studies have consistently shown that technology-enhanced learning environments improve learner engagement, retention, and motivation (Afdholy & Hidayat, 2024); (Pendidikan & Jawa, 2021). The integration of artificial intelligence, gamification, and augmented reality offers further possibilities for immersive and adaptive language learning experiences.

4.6.2. Multi-Stakeholder Collaboration

The literature highlights that effective language preservation in the postmodern era requires coordinated efforts among diverse stakeholders. These include government agencies, educational institutions, cultural

organizations, digital content creators, and community leaders (Siregar et al., 2025). Collaboration ensures that preservation strategies are not only innovative but also grounded in local realities and supported by adequate resources and policy frameworks (Widiyono et al., 2020).

Such partnerships are crucial in establishing sustainable ecosystems for language use and education. For example, joint initiatives between schools and cultural communities have led to the creation of context-relevant curricula, teacher training programs, and interactive cultural festivals that promote Javanese in both formal and informal settings (Ntou, 2024).

In summary, the success of language preservation strategies in the postmodern era depends on their ability to combine technological innovation with cultural authenticity and collaborative governance. Approaches that are participatory, decentralized, and culturally adaptive are more likely to resonate with today's youth and contribute meaningfully to the continuity of Javanese linguistic heritage (Istanti et al., 2025).

4.7. Research Gaps and Recommendations

While the existing literature offers a rich array of insights and innovations in Javanese language preservation, several critical research gaps remain. Addressing these gaps is essential for advancing more effective, sustainable, and inclusive preservation efforts.

4.7.1. Lack of Longitudinal Studies

Most studies reviewed in this SLR are cross-sectional in nature, providing only a snapshot of interventions or language conditions at a single point in time. This limitation hampers the ability to assess the long-term impact of preservation strategies (Yannuar & Nazarudin, 2024). Future research should prioritize longitudinal designs that track language use, attitudes, and proficiency over extended periods to evaluate sustainability and adaptation across generations.

4.7.2. Limited Multidisciplinary Approaches

Javanese language preservation research is predominantly framed within educational or linguistic perspectives. There is a need for more multidisciplinary approaches that integrate insights from technology studies, psychology, sociology, and communication sciences. Such integration would provide a more holistic understanding of language shift dynamics and the sociotechnical environments that support or hinder revitalization (Sulistyarini et al., 2024).

4.7.3. Narrow Geographical Coverage

A significant portion of the reviewed studies focus on Java, particularly Central and East Java, where the majority of Javanese speakers reside. However, Javanese-speaking communities also exist in other regions such as Sumatra and Kalimantan. Expanding the geographic scope of future research would provide a more representative and comparative understanding of

language maintenance practices in diverse sociocultural contexts (Wulandari et al., 2025).

4.8. Holistic Integration Model for Javanese Language Preservation

Based on the synthesis of the reviewed literature, a holistic integration model has been developed comprising five key pillars.

- 1) **The first pillar, *Adaptive Digital Technology***, emphasizes the integration of artificial intelligence (AI) to develop Javanese language learning applications that adapt content to users' proficiency levels. This pillar also includes the creation of dedicated social media platforms equipped with gamification features and reward systems to encourage the active use of Javanese (Susanto et al., 2023). Furthermore, immersive technologies such as virtual reality (VR) and augmented reality (AR) are utilized to offer experiential engagement with Javanese culture, including simulations of traditional ceremonies, wayang performances, and virtual tours of historical sites narrated in the Javanese language.
- 2) **The second pillar, *Transformative Education***, promotes a reformed educational approach in which the Javanese language is not treated merely as a separate local subject but is integrated across various academic disciplines. This involves the development of interactive, game-based learning methods centered around Javanese folklore and inter-school digital competitions. In line with initiatives from the Yogyakarta Special Region (DIY), this pillar also supports sustainable teacher training programs aimed at equipping educators with the capacity to incorporate digital tools in culturally relevant ways, such as organizing mandatory museum visits and Javanese storytelling contests (Mahastama & Krisnawati, 2020).
- 3) **The third pillar, *Community and Popular Culture***, integrates the creative industry by collaborating with music producers, YouTube content creators, and animators to generate engaging Javanese-language content that appeals to younger audiences. It also strengthens intergenerational mentoring programs that connect older generations with youth to foster knowledge transfer and cultural continuity. In addition, hybrid festivals and competitions are developed to combine traditional "Javanese language festivals" with digital exhibitions and performances, creating a blended format that is both accessible and culturally rich (Suwignyo et al., 2024).
- 4) **The fourth pillar, *Policy and Regulation***, focuses on optimizing the implementation of existing legal frameworks, such as Article 32 (2) of the 1945 Constitution, Law No. 24 of 2009, Government Regulation No. 57 of 2014, and Ministry of Home Affairs Regulation No. 40 of 2007, which govern the preservation of regional languages. However, these policies have not yet reached their full potential and face several challenges. This pillar advocates for providing incentives such as application development subsidies, tax breaks for companies producing Javanese-language content, and research grants for innovation in digital learning. It also supports the development of

quality standards for digital Javanese content that ensure linguistic accuracy and cultural relevance (Wulandari et al., 2025).

- 5) **The fifth pillar, *Monitoring and Evaluation***, calls for the establishment of real-time digital dashboards to track the usage of the Javanese language across platforms. It promotes the use of periodic surveys employing mobile technology and big data analysis to measure language vitality and identify trends in social media use (Istanti et al., 2025). Additionally, this pillar includes the implementation of a feedback loop system, enabling the refinement of strategies based on user feedback from learning applications, institutional evaluation reports, and community assessments. This is particularly important given that existing language preservation practices are often suboptimal due to misalignment between regulation, funding, and implementation commitment (Sulistiyarini et al., 2024).

5. Conclusion

This study successfully identified the current conditions and innovative strategies for preserving the Javanese language among the younger generation through a Systematic Literature Review of 20 high-quality articles published between 2019 and 2024. The key findings reveal a significant decline in the use of the Javanese language among youth, with 40% of the reviewed research emphasizing the role of digital technology as a central solution. This reflects a paradigm shift from traditional approaches to more digitally driven innovations.

Five primary factors contribute to the decline in Javanese language use: the dominance of Indonesian and English in digital media, weak intergenerational language transmission, misalignment between traditional teaching methods and the characteristics of digital-native learners, negative social stigma surrounding the perceived complexity and irrelevance of Javanese, and the cultural invasion brought about by globalization. These findings confirm that the challenge of preserving the Javanese language is not merely linguistic but represents a deeper cultural identity crisis in the postmodern era.

Several effective strategies have been identified, including the development of digital Javanese literature to boost youth interest, the implementation of audiovisual learning media tailored to digital-native preferences, the use of digital learning platforms such as BeSmart to increase accessibility, and digital storytelling programs that engage early childhood learners. The application of multicultural education has proven essential, especially in ethnically diverse regions, where technology serves as a unifying tool to bridge cultural differences.

The proposed Holistic Integration Model comprises five interrelated pillars: (1) Adaptive Digital Technology, integrating AI, dedicated social media, and VR/AR for immersive cultural experiences; (2) Transformative Education, with curriculum integration and gamified instruction; (3) Community and Popular Culture, engaging the creative industry and fostering intergenerational mentoring; (4) Policy and Regulation, optimizing the enforcement of the 1945 Constitution, Law No. 24/2009, and related policies with incentives for digital innovation; and (5)

Monitoring and Evaluation, supported by real-time digital dashboards and feedback mechanisms.

This study contributes significantly to the theoretical advancement of digital-based regional language preservation, provides a practical framework for educators and cultural stakeholders, and offers policy recommendations that respond to the realities of the digital generation. Nonetheless, limitations include a narrow geographic focus, the lack of longitudinal studies, and methodological heterogeneity across reviewed works.

Future research is recommended to explore longitudinal studies that assess the long-term effectiveness of various strategies, adopt multidisciplinary perspectives incorporating technology, psychology, and sociology, and expand the geographic scope to include Javanese-speaking populations beyond Central and East Java. Furthermore, pilot implementation of the Holistic Integration Model in specific communities is encouraged to validate its effectiveness. Ultimately, the success of Javanese language preservation in the postmodern era requires synergy between technological innovation, supportive policy, and active community participation in building a digital ecosystem that not only preserves but also revitalizes the Javanese language as a living and relevant cultural heritage for future generations.

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