



Nurturing Future Leaders: Integrating Javanese Cultural Values To Enhance 21st-Century Literacies In A Digital Society

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Abstract

This study aims to examine the integration of Javanese cultural values as a strategic approach to strengthening basic literacies and 21st-century competencies in the context of a rapidly evolving digital society. In response to ongoing technological transformation, the development of future leaders requires not only technical proficiency but also a well-grounded ethical and cultural framework. This study employs a qualitative descriptive design based on a systematic literature review and document analysis. The data sources consist primarily of peer-reviewed articles indexed in Scopus and Web of Science databases, complemented by relevant academic books and policy documents. The data were analyzed using a thematic analysis approach to identify key patterns and conceptual relationships between cultural values and literacy development. The findings indicate that Javanese cultural principles function as an ethical and conceptual foundation for the development of multidimensional literacies. The value of gotong royong promotes collaborative and socially responsible orientations within social and financial literacy, while nrimo supports reflective and adaptive thinking in navigating digital challenges. In the context of scientific and digital literacy, these values foster responsible and critical engagement with technology. Furthermore, the concept of madya manggala recontextualizes civic literacy by emphasizing balance, social harmony, and ethical leadership in digital environments. This study contributes to the discourse on culturally responsive education by proposing a conceptual framework that aligns 21st-century competencies with indigenous knowledge systems. The findings suggest that integrating local cultural values into educational practices can support the development of resilient, ethically grounded, and globally competitive future leaders

Keywords: *21 st Century Competencies, Digital Society, Javanese Cultural Value, Culturally Responsive Education, Ethical Leadership*

Abstrak

Penelitian ini bertujuan untuk menguji integrasi nilai-nilai budaya Jawa sebagai pendekatan strategis untuk memperkuat literasi dasar dan kompetensi abad ke-21 dalam konteks masyarakat digital yang berkembang pesat. Sebagai respons terhadap transformasi teknologi yang terus berlangsung, pengembangan pemimpin masa depan tidak hanya membutuhkan kemahiran teknis, tetapi juga kerangka etis dan budaya yang kuat. Penelitian ini menggunakan desain deskriptif kualitatif berbasis tinjauan pustaka sistematis dan analisis

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dokumen. Sumber data utamanya terdiri dari artikel-artikel peer-reviewed yang terindeks dalam basis data Scopus dan Web of Science, serta dilengkapi dengan buku-buku akademis dan dokumen kebijakan yang relevan. Data dianalisis menggunakan pendekatan analisis tematik untuk mengidentifikasi pola-pola utama dan hubungan konseptual antara nilai-nilai budaya dan pengembangan literasi. Temuan menunjukkan bahwa prinsip-prinsip budaya Jawa berfungsi sebagai fondasi etis dan konseptual bagi pengembangan literasi multidimensi. Nilai gotong royong mendorong orientasi kolaboratif dan tanggung jawab sosial dalam literasi sosial dan keuangan, sementara nrimo mendukung pemikiran reflektif dan adaptif dalam menghadapi tantangan digital. Dalam konteks literasi sains dan digital, nilai-nilai ini menumbuhkan keterlibatan yang bertanggung jawab dan kritis terhadap teknologi. Lebih lanjut, konsep madya manggala merekontekstualisasikan literasi kewargaan dengan menekankan keseimbangan, keharmonisan sosial, dan kepemimpinan beretika di lingkungan digital. Penelitian ini berkontribusi pada wacana pendidikan tanggap budaya (*culturally responsive education*) dengan mengusulkan kerangka konseptual yang menyelaraskan kompetensi abad ke-21 dengan sistem pengetahuan lokal. Temuan ini menunjukkan bahwa mengintegrasikan nilai-nilai budaya lokal ke dalam praktik pendidikan dapat mendukung pembentukan pemimpin masa depan yang tangguh, berlandaskan etika, dan berdaya saing global.

Kata Kunci: Pendidikan Politik Demokratis, John Dewey, Generasi Z, Demokrasi Pancasila

Introduction

The rapid proliferation of digital technologies in the twenty-first century has fundamentally restructured the way human beings learn, communicate, collaborate, and exercise leadership across all domains of society. This transformation extends well beyond the technological dimension, penetrating the social, ethical, and cultural fabric of contemporary civilization in ways that demand a corresponding reconceptualization of educational purpose and design. At the intersection of technological acceleration and educational reform lies a critical imperative: the development of future leaders equipped not merely with technical proficiency, but with robust ethical grounding and multidimensional competencies capable of navigating the complexities of an interconnected digital world. Palacios-Rodríguez et al. (2023) assert that rapid technological advances have triggered a paradigm shift in education globally, compelling institutions to harness digital tools and platforms as vehicles for enhancing teaching and learning processes at every level. Within the framework of Education 4.0, this shift translates into a comprehensive reimagining of graduate competencies, wherein collaboration, creativity, critical thinking, communication, entrepreneurship, global citizenship, and problem-solving collectively constitute the foundational architecture of twenty-first-century readiness (Koutsogiannopoulou et al., 2023). The scale of this transformation has prompted concerted policy responses across nations, including Indonesia, where educational reform has become both a strategic priority and a site of ongoing negotiation between global demands and local values.

In the Indonesian context, the urgency of educational transformation is amplified by the dual challenge of maintaining cultural continuity while preparing a generation of learners for full participation in the global digital economy. The implementation of Kurikulum Merdeka (Freedom to Learn) represents the government's most ambitious response to this challenge, introducing project-based learning modalities and the Pancasila Student Profile (Profil Pelajar Pancasila) as twin mechanisms for cultivating both global competence and national character. OECD (2024) documents that this reform reflects a broader international shift toward learning approaches that foreground transversal competencies digital literacy, collaboration, communication, and problem-solving over content-based knowledge acquisition alone, while simultaneously repositioning formative assessment as the preferred instrument for measuring holistic learner development. Al-Karaki et al. (2025) further observe that digital transformation has emerged as one of the most efficient pathways through which educational systems can adapt to technological change while simultaneously pursuing broader developmental goals. However, the discourse surrounding digital transformation in education tends to frame competency development through a lens that privileges technical skill acquisition, often overlooking the cultural and ethical dimensions that give competence its moral direction and social meaning a gap that is particularly consequential for nations with rich indigenous knowledge traditions such as Indonesia.

The global literature on twenty-first-century competencies, while extensive and methodologically diverse, reveals a persistent epistemological asymmetry: the dominant conceptual frameworks including P21, DigComp, and OECD's Learning Compass have been predominantly constructed within North American and European intellectual traditions. Lohr (2025) critically notes that most models defining digital literacy originate from scholars in North America and Europe and tend to adopt universalist orientations that may prove difficult to localize within the realities of Africa, Latin America, and Southeast Asia. This universalist bias is not merely an academic concern; it carries material consequences for curriculum design and pedagogical practice in nations whose cultural epistemologies differ fundamentally from those embedded in dominant frameworks. Arjaya et al. (2024), in a comprehensive bibliometric analysis of 156 Scopus-indexed articles published between 2020 and 2024, confirm that while global interest in integrating local wisdom into education has grown significantly with Indonesia leading research contributions systematic guidance on how to operationalize this integration within competency-oriented curricula remains critically underdeveloped. This gap creates a structural deficit in the literature: a body of knowledge that acknowledges the value of indigenous wisdom yet lacks

the conceptual infrastructure to translate that acknowledgment into coherent pedagogical frameworks capable of bridging local values with global competency demands.

The specific knowledge tradition examined in this article Javanese cultural philosophy represents one of the most historically developed and sociologically influential value systems in the Indonesian archipelago, encompassing ethical principles that have governed social life, community organization, and educational practice across centuries. Central among these principles are three concepts of particular relevance to twenty-first-century literacy development: *gotong royong* (collective mutual cooperation), *nrimo* (reflective acceptance and adaptive resilience), and *madya manggala*, derived from Ki Hadjar Dewantara's pedagogical trilogy *Ing Ngarsa Sung Tuladha*, *Ing Madya Mangun Karsa*, *Tut Wuri Handayani*. Andriyanto et al. (2022) confirm that Javanese ethical values including gotong royong, kejawen, and reverence for the natural and social environment continue to permeate everyday life through language, literature, and cultural practice, offering a living value repository relevant to character formation in the digital era. These values are not antiquarian curiosities but active normative frameworks that shape how Javanese communities understand responsibility, interdependence, adaptation, and leadership precisely the dispositions that contemporary competency frameworks identify as essential for twenty-first-century participation and leadership.

The theoretical architecture of this article rests on three interconnected conceptual pillars. The first is culturally responsive education (CRE), pioneered by Ladson-Billings (1995, as cited in Steele et al., 2024), who conceptualized culturally relevant pedagogy as simultaneously advancing academic achievement, cultural competence, and critical sociopolitical consciousness, and subsequently elaborated by Gay (2018, as cited in Steele et al., 2024), who emphasized the use of students' cultural knowledge, prior experiences, and performance styles as central resources in designing effective learning. The second pillar is the twenty-first-century competency framework, which positions critical thinking, collaboration, digital literacy, creativity, and cultural awareness as foundational educational outcomes (Okunlola et al., 2025). The third pillar is Dewantara's educational philosophy, whose trilogy of leadership and pedagogy articulates a distinctively Javanese model of ethical educational stewardship. Supriadi et al. (2025), in a quantitative study employing Structural Equation Modelling (SEM) with 116 respondents at Taman siswa institutions in Yogyakarta, provide empirical evidence that Ki Hadjar Dewantara's leadership variable significantly and positively influences literacy leadership ($\beta = 0.647$; $p < 0.05$), with *Ing Madya Mangun Karsa*

emerging as the dimension that most powerfully cultivates an environment of sustained, empowering literacy engagement. The convergence of these three theoretical pillars establishes a coherent epistemological foundation from which the conceptual framework of this article is constructed.

A systematic mapping of extant literature reveals three thematic clusters that constitute the immediate scholarly context for this study. The first cluster encompasses research on local wisdom integration in Indonesian character education. Parhan & Dwiputra (2023), in a PRISMA-based systematic review across Scopus and Google Scholar, identify that while local wisdom can be implemented across formal schooling, family, and community settings in forms ranging from learning about to learning through cultural values, comprehensive studies on its optimization remain severely limited. Ramadhan et al. (2024), through an ethnopedagogical case study at Pertiwi Kindergarten Pakualaman, Yogyakarta, demonstrate empirically that ethnopedagogy-based approaches significantly enhance children's cultural awareness and contribute to multicultural national identity formation. The second cluster covers Javanese values in digital and character education contexts. Andriyanto et al. (2022) establish that ethical values embedded in modern Javanese literary works humility, harmony, social responsibility, and respect retain their relevance as foundations of identity formation and character development in the digital era. The third cluster focuses on culturally situated educational leadership. Bellibaş et al. (2025), in a systematic review of 37 studies drawn from Scopus, Web of Science, ERIC, and Google Scholar, confirm that collectivism and power distance are the cultural dimensions most consistently shaping educational leadership practices, while Tan (2024) demonstrates across 72 studies on Singapore school leadership that collectivist values engender morally responsible leadership orientations alongside strategic pragmatism oriented toward twenty-first-century workforce preparation.

Despite these contributions, critical research gaps remain that have not been adequately addressed in the literature. First, existing studies examine the integration of indigenous wisdom into education within discrete disciplinary silos character, science, social cohesion, or specific curricular subjects without systematically mapping correspondences between specific Javanese values and the full spectrum of multidimensional twenty-first-century literacies. Second, no conceptual framework to date has explicitly operationalized the relationship between gotong royong, *nrmo*, and *madya manggala* and the simultaneous development of social, financial, scientific, digital, and civic literacies within a digital society. Haviv et al. (2026), in a systematic review utilizing PRISMA methodology across Scopus, Web of Science, and ScienceDirect, confirm that while integrating IKS into education significantly enhances scientific concept mastery, creative thinking, and environmental

awareness, strategies for building inclusive curricula with indigenous communities remain underdeveloped. Third, research on culturally grounded digital leadership from Global South perspectives is strikingly absent; Okunlola et al. (2025), in a bibliometric analysis of 338 Scopus-indexed documents, identify K-12 digital leadership and culturally situated leadership frameworks among the most underdeveloped niches in the field, with Global South participation remaining persistently underrepresented. Fourth, the specific relevance of Dewantara's philosophy and the *madya manggala* principle in particular as an ethical framework for digital civic leadership and citizenship literacy has yet to receive systematic academic treatment in internationally indexed scholarship.

This article responds directly to these gaps by proposing an integrated conceptual framework that positions Javanese cultural values not as supplementary content but as an autonomous epistemological foundation for multidimensional literacy and future leader development. Prihantoro & Tebbett (2025), in a qualitative study involving 100 participants across universities in Aceh, Indonesia, argue compellingly that integrating local knowledge into higher education curricula constitutes a paradigm of ways of knowing and being that challenges dominant Eurocentric epistemologies while simultaneously promoting cultural identity, linguistic preservation, and context-sensitive problem-solving skills. This article operationalizes that epistemological stance by constructing explicit conceptual correspondences between Javanese values and literacy dimensions: *gotong royong* with collaborative social and financial literacy; *urimo* with digital resilience and reflective scientific literacy; and *madya manggala* with ethical civic leadership in digital environments. In doing so, it extends the scope of culturally responsive education scholarship beyond its dominant Western application contexts into a Global South framework grounded in one of the world's richest indigenous philosophical traditions.

The methodological tendency dominating the relevant literature is the systematic literature review (SLR) guided by PRISMA protocols, deployed consistently across the three thematic clusters examined above (Parhan & Dwiputra, 2023; Bellibaş et al., 2025; Haviv et al., 2026). Theoretically, a discernible shift is underway from reliance on single imported frameworks such as TPACK or Hofstede's cultural dimensions toward more integrative approaches that validate the epistemic legitimacy of local knowledge systems alongside global competency models. Ouyang et al. (2025), in a systematic review of studies applying Hofstede's cultural dimensions in educational settings, note that the theory's application to education remains limited and predominantly oriented toward organizational and business

contexts, urging education scholars to develop contextually grounded, culturally responsive theoretical frameworks. This scholarly trajectory directly affirms the orientation of this article and situates it within an emerging but still underrepresented strand of culturally embedded educational research. Dasilva et al. (2023), in a systematic review of indigenous knowledge integration in primary schools across developing and emerging countries, further confirm that indigenous culture and worldview serve as fundamental attributes for community identity and scientific concept acquisition, yet systematic implementation models remain underdeveloped in diverse rural and pluralistic national contexts.

Against this backdrop, this study is guided by three interconnected research questions: (1) How do Javanese cultural values function as an ethical and conceptual foundation for multidimensional twenty-first-century literacy development?; (2) How can the integration of *gotong royong*, *nrimo*, and *madya manggala* strengthen social, financial, scientific, digital, and civic literacies in the context of a digital society?; and (3) What conceptual framework can be proposed to align twenty-first-century competencies with the Javanese indigenous knowledge system for the purpose of nurturing future ethical leaders? Brooks et al. (2024), in a study examining blended-learning approaches to character and leadership education at the University of Hong Kong, provide evidence that culturally embedded leadership education makes significant contributions to students' intellectual understanding of leadership, leadership identity formation, and ethical development reinforcing the importance of local cultural grounding in future leader preparation programs. These research questions collectively orient this study toward its dual purpose: to critically examine the conceptual correspondences between Javanese values and twenty-first-century literacy dimensions, and to construct an original conceptual framework that can serve as a reference architecture for culturally responsive educational practice.

This article advances three distinct scholarly contributions to the fields of culturally responsive education, indigenous knowledge studies, and twenty-first-century competency research. First, it bridges the epistemological divide between globally dominant Western literacy frameworks and the Javanese indigenous knowledge tradition by constructing an explicit, systematic conceptual mapping a contribution that moves beyond descriptive cultural documentation toward analytical framework-building. Second, it introduces the concept of *madya manggala* as a philosophically grounded model of digital civic leadership into international academic discourse, adding a dimension of ethical leadership that existing competency frameworks systematically lack. Third, by integrating the future leaders dimension into its analytical frame, it elevates the discussion from individual character formation toward the strategic development of the next generation of ethically grounded,

culturally anchored, and globally competitive leaders. Fathurrochman (2025), in a mixed-methods explanatory sequential study conducted over nine months across three elementary schools in Bali, Yogyakarta, and South Sulawesi, documents that local wisdom integration produces significant improvements in cultural understanding (Cohen's $d = 1.15$), academic achievement ($p < 0.01$), and cultural identity ($M = 3.4 - 4.3$), while identifying teacher capacity limitations, insufficient time allocation, and weak community collaboration as persistent implementation challenges findings that underscore both the promise of the framework proposed in this article and the practical conditions that future empirical research must address in translating it into sustainable educational practice

Method

This study employs a qualitative descriptive design grounded in a systematic literature review (SLR) methodology, selected in alignment with the conceptual and non-empirical nature of the research questions. Rather than generating primary field data, this approach enables the systematic identification, critical evaluation, and thematic synthesis of existing scholarly knowledge in a transparent and replicable manner (Page et al., 2021). The SLR protocol does not aim to produce statistical meta-analysis; instead, it functions as a rigorous procedural scaffold ensuring comprehensiveness and systematicity in literature retrieval and selection prior to qualitative thematic synthesis. As Villamin (2025) affirms, literature-based qualitative descriptive research enables researchers to construct deep understanding of complex phenomena through the interpretive analysis of texts and concepts embedded in academic documents, without aspiring to statistical generalizability. Data sources are exclusively secondary in nature and organized across two layers: peer-reviewed journal articles indexed in Scopus, Web of Science, ERIC, and Google Scholar as primary sources, complemented by international policy documents and institutional reports from OECD, UNESCO, and Indonesia's Ministry of Education, Culture, Research, and Technology. The selection of Scopus and Web of Science as lead databases reflects their internationally recognized indexing breadth and peer-review quality standards (Marzi et al., 2025).

Literature retrieval followed a structured Boolean search protocol combining English and Indonesian keywords, including "Javanese cultural values", "*gotong royong*", "*nrmo*", "Ki Hadjar Dewantara", "21st-century literacies", "digital literacy", "culturally responsive education", "indigenous knowledge systems", "future leaders", and "local wisdom digital society", connected through AND/OR operators across databases. The search was bounded to publications from 2020 to 2025, with a principled exception for foundational theoretical

works including Ladson-Billings' culturally relevant pedagogy and Dewantara's educational philosophy retained beyond this range to preserve the integrity of the conceptual framework. The retrieval and screening process adhered to the four-stage PRISMA 2020 flow: identification, screening, eligibility assessment, and final inclusion (Page et al., 2021). Inclusion criteria required that articles be published in peer-reviewed journals indexed in Scopus, Web of Science, or SINTA 1–2; written in English or Indonesian; thematically relevant to Javanese or Indonesian local wisdom, twenty-first-century literacies, digital competence, culturally responsive education, or character and leadership development; and accessible as open-access or through institutional repositories. Articles excluded were those lacking peer review, thematically peripheral despite keyword overlap, duplicated across databases, or published in other languages. This rigorous selection process yielded a final corpus of 47 documents 39 peer-reviewed journal articles and 8 policy or institutional reports constituting the empirical base of this study.

Analytical procedures were conducted using reflexive thematic analysis following Braun and Clarke's (2022) six-phase framework: familiarization with data, initial inductive coding, theme generation, theme review and refinement, theme definition and naming, and production of the analytic report. Naeem et al. (2023) affirm that systematic thematic analysis oriented toward conceptual model development requires a clear distinction between inductive and deductive orientations; the inductive approach adopted here allows themes to emerge organically from the data rather than being imposed by pre-established theoretical categories. Complementing this process, qualitative document analysis (QDA) was applied as the primary technique for data examination, treating each academic document as a unit of conceptual inquiry. Morgan (2022) establishes that QDA constitutes a valid and methodologically rigorous approach in qualitative research, enabling deep interrogation of pre-existing texts without requiring researcher presence in the field. To support transparency and analytical precision, a thematic matrix was constructed to map conceptual correspondences between specific Javanese values *gotong royong*, *nrimo*, and *madya manggala* and the five targeted literacy dimensions, providing the structural foundation for the conceptual framework presented in the findings.

Discussion

The systematic literature retrieval process yielded a final corpus of 47 documents satisfying all pre-established inclusion criteria, comprising 39 peer-reviewed journal articles indexed in Scopus, Web of Science, or SINTA 1–2, and 8 institutional policy documents and international reports. Of the 39 journal articles, 22 (56.4%) were published between 2022 and 2024, 11 (28.2%) in 2025, and 6 (15.4%) between 2020 and 2021, confirming the

contemporaneity of the scholarly base underpinning this study. Geographically, 24 articles (61.5%) were anchored in the Indonesian context, 9 (23.1%) addressed cross-national Southeast Asian or global perspectives, and 6 (15.4%) drew on international frameworks with direct conceptual applicability to this study's focus. Methodologically, 19 articles (48.7%) employed systematic or bibliometric review designs, 12 (30.8%) qualitative descriptive approaches, 5 (12.8%) experimental or quasi-experimental designs, and 3 (7.7%) were conceptual papers or philosophical analyses. Thematic analysis of this corpus produced four integrated themes constituting the findings of this study: (1) *gotong royong* as the foundation of collaborative social and financial literacy; (2) *nrimo* as the basis of digital resilience and adaptive scientific literacy; (3) *madya manggala* as the philosophical anchor of ethical civic leadership; and (4) methodological trends and convergent patterns in local wisdom research. These themes are presented below in correspondence with the three research questions articulated in the introduction, and interpreted within the theoretical framework of culturally responsive education (CRE), twenty-first-century competency models, and Dewantara's educational philosophy.

The first and most consistently evidenced theme across the corpus concerns the function of *gotong royong* as a culturally grounded mechanism for developing collaborative social and financial literacy in a digital society. *Gotong royong*, interpreted in this study not merely as a social ritual but as a normative ethical principle governing mutual obligation and collective accountability, exhibits substantive conceptual alignment with the relational and participatory dimensions of social literacy. Rahiem (2025), employing a mixed-methods ethnographic-quantitative design across five villages in Blora Regency, Central Java, documents that *gotong royong* operates as a form of collective resilience wherein community members voluntarily contribute labor and resources to reduce costs and accelerate shared developmental processes a logic of communal resource-sharing that translates directly into the solidarity-based orientation required for responsible social literacy in digital communities. This finding is significant because it demonstrates that *gotong royong* is not reducible to pre-modern communal labor but retains living normative force in contemporary Indonesian economic and social life, including in digitally mediated contexts. Suryadi et al. (2025), in a study of micro, small, and medium enterprises (MSMEs) in Surakarta, further establish that Javanese values including *gotong royong*, *nrimo ing pandum*, *tepa slira*, and *ajining dhiri* collectively function as social capital that strengthens communal cohesion, psychological resilience, and ethical business conduct within digital transformation processes a finding that compellingly situates

gotong royong within the financial literacy domain as a value promoting ethically responsible and communally oriented economic decision-making.

The correspondence between *gotong royong* and financial literacy is further substantiated by evidence from educational policy contexts. OECD (2024) documents that Indonesia's "Kurikulum Merdeka" reform explicitly repositions gotong royong as a principle of collective responsibility oriented toward the construction of empowering, joyful, and autonomous learning communities an institutional acknowledgment that this value possesses direct pedagogical applicability beyond cultural symbolism. Andriawan et al. (2024) confirm that the values of gotong royong and musyawarah (deliberative consensus) provide a robust normative foundation for community-based collaborative learning models, with embedded social norms driving inclusivity and active participation in ways particularly effective within the Indonesian sociocultural context. From the perspective of CRE theory, this finding validates Gay's (2018, as cited in Steele et al., 2024) proposition that culturally anchored values when mobilized as active pedagogical resources generate learning environments that are not only academically effective but also culturally resonant and socially meaningful. The integration of gotong royong into social and financial literacy development thus represents more than a methodological choice; it constitutes an epistemological repositioning that treats indigenous values as genuinely constitutive of competency rather than merely decorative additions to a Western-derived framework.

The second theme addresses the conceptual correspondence between *nrimo* a Javanese philosophical disposition of reflective, spiritually grounded acceptance and the competencies of digital resilience and adaptive scientific thinking required in a technology-saturated society. Contrary to reductive interpretations of *nrimo* as fatalistic passivism, the literature consistently reconceptualizes it as an active, reflective, and purposive orientation toward adversity and uncertainty. Sari et al. (as cited in the Indonesian Wellbeing Technology Kits study, 2025) describe *nrimo* as accepting difficult life events with a calm, reflective attitude rooted in a harmonious relationship with the transcendent, interconnected with spiritual devotion and the belief that equanimity in adversity reflects moral integrity rather than resignation. Critically, the same body of literature frames *nrimo* as comparable to mindfulness-based acceptance practices, with Hyangsook et al. (2023, as cited in JMIR Formative Research) confirming that *nrimo* shares structural features with mindfulness in its emphasis on present-focused acceptance and meaning-making in the face of difficulty features directly relevant to the psychological demands of digital environments characterized by information overload, uncertainty, and continuous disruption.

This reconceptualization of *nrimo* as active resilience finds direct empirical support in the digital context. Sun et al. (2022), in a scoping review of digital resilience in school education settings, define digital resilience as a circular process oriented toward greater wellbeing through behavioral performance and psychosocial functioning when confronting threats, challenges, or adversities in technology use encompassing understanding of online threats, mastery of solutions, recovery from digital stress, and progress through self-efficacy. The structural parallels between this definition and the active dimensions of *nrimo* are analytically significant: both involve a disposition of composed, self-regulated response to adversity rather than reactive avoidance or compulsive engagement. Purwanto et al. (2022), in a study of the digital MSME ecosystem in Indonesia, document that entrepreneurs in Yogyakarta exhibit *nrimo*-influenced orientations that manifest as measured acceptance of present conditions without excessive striving for the unattained a disposition that, in digital economic contexts, translates into adaptive rather than impulsive engagement with technological change. These findings collectively support the proposition that *nrimo*, recontextualized within digital education, can serve as a culturally authentic foundation for developing the psychosocial dimensions of digital literacy specifically the metacognitive self-regulation and reflective critical thinking required to navigate algorithmic environments, misinformation ecosystems, and accelerating technological obsolescence.

Within the domain of scientific literacy, the relevance of *nrimo* as an adaptive epistemic orientation is further substantiated by evidence from science education. Lubis et al. (2022), in a quasi-experimental study employing problem-based learning oriented toward socio-scientific issues, demonstrate that local wisdom-integrated learning significantly enhances students' critical thinking and science literacy competencies in ways that contextually grounded approaches uniquely achieve. Suprpto et al. (2024), in a systematic exploration of science concepts embedded in Indonesian indigenous culture, confirm that local cultural frameworks harbor significant potential for actualization within national curricula as contextually meaningful and cognitively authentic pedagogical approaches. These findings are interpreted within the CRE framework as evidence that indigenous epistemic orientations including the reflective equanimity of "*nrimo*" do not merely supplement scientific literacy but actively constitute its metacognitive and attitudinal dimensions, providing learners with culturally authentic cognitive tools for engaging critically and responsibly with scientific knowledge and technological change.

The third theme and the most theoretically novel contribution of this study concerns the relevance of the *madya manggala* principle, derived from Dewantara's *Ing Madya Mangun Karsa*, for the development of civic literacy and ethical digital leadership. *Madya manggala* represents a model of leadership-from-the-middle that foregrounds communal empowerment, motivational stewardship, and balanced facilitation over hierarchical authority a model whose logic resonates profoundly with the demands of digital civic leadership in pluralistic, networked societies. Supriadi et al. (2025) provide the most direct empirical evidence for this correspondence, demonstrating through SEM analysis with 116 respondents at Taman siswa institutions in Yogyakarta that the Ki Hadjar Dewantara leadership variable significantly and positively predicts literacy leadership ($\beta = 0.647$; $p < 0.05$), with *Ing Madya Mangun Karsa* identified as the dimension most powerfully conducive to building environments of sustained, empowering literacy engagement precisely the relational, participatory conditions required for active digital citizenship. Khoiruddin et al. (2025), in a conceptual study integrating Dewantara's Among System with Mobile Seamless Learning paradigms in Islamic Religious Education, find that the integration of *Ing Ngarsa Sung Tulodha*, *Ing Madya Mangun Karsa*, and *Tut Wuri Handayani* constructs a learning environment that is simultaneously humanistic, contextual, flexible, and value-internalization oriented positioning digital technology as a medium for character formation and autonomous learning rather than an end in itself.

Within the specific domain of digital citizenship and civic literacy, the findings reveal a critical gap that *madya manggala* is uniquely positioned to address. Afriadi & Fitri (2025), in a convergent mixed-methods study involving 120 students and 15 Civic Education teachers across five senior high schools in Makassar, South Sulawesi, document that while Indonesian students demonstrate strong ethical awareness particularly around online safety and misinformation, their actual digital civic engagement remains predominantly passive; teachers employ critical media literacy approaches but encounter persistent barriers including insufficient professional preparation, rigid curricular mandates, and inadequate institutional support. This gap between awareness and civic agency between knowing and acting reflects precisely the motivational and empowering deficit that the *madya manggala* model is designed to address. Iskandar et al. (2025), in a study of digital citizenship literacy in Indonesia, further confirm that privacy awareness and social campaigns partially mediate civic participation in digital spaces, yet the structural cultural grounding of such engagement remains undertheorized. The *madya manggala* principle offers this missing cultural architecture: a philosophically coherent, historically validated model of leadership that positions the educator not as a transmitter of civic knowledge but as a catalytic enabler of civic agency

motivating learners from within their communal experience rather than directing them from above. Interpreted through the lens of ethical leadership theory, *madya manggala* operationalizes a distributive, trust-based leadership model that aligns with the collaborative, transparent, and ethically accountable forms of digital citizenship increasingly demanded in contemporary democratic digital societies.

The fourth theme addresses the methodological landscape and evolving research trajectory of the broader field, as revealed through cross-corpus analysis. A dominant and consistent methodological tendency across the relevant literature is the systematic literature review guided by PRISMA 2020, deployed across diverse disciplinary contexts from indigenous knowledge integration to digital literacy and educational leadership. Parhan & Dwiputra (2023), retrieving 88 articles from Scopus and Google Scholar with 18 meeting final selection criteria, confirm through thematic analysis that local wisdom in character education can operate across formal schooling, family, and community contexts yet comprehensive operationalization models remain critically underdeveloped. Sihombing et al. (2025), in a systematic review with bibliometric mapping of 29 articles on ethnoscience and conservation education in Indonesia (2020–2025), identify a fluctuating but generally ascending publication trend with notable acceleration in 2023–2024 following the implementation of Kurikulum Merdeka a policy-driven bibliometric signal confirming the increasing institutionalization of local wisdom research as an educationally legitimate field. Thematically, the corpus reveals a discernible shift in research orientation from treating indigenous values as passive cultural content to positioning them as active pedagogical frameworks capable of structuring competency development across scientific, digital, and social dimensions a shift that this article both reflects and advances.

A further cross-corpus pattern of methodological significance is the consistent identification of the gap between technical digital literacy and its ethical, civic, and cultural dimensions. Iskandar et al. (2025) document through a PRISMA-based bibliometric analysis of 253 initial articles 123 ultimately deemed relevant that scholarly attention to digital citizenship literacy in Indonesia has expanded markedly, yet the integration of indigenous cultural values as ethical frameworks for digital civic engagement remains systematically underrepresented. This finding directly confirms the research gap identified in this study's introduction and validates the analytical positioning of *madya manggala* as a culturally authentic foundation for bridging the awareness-agency gap in digital civic education. The corpus also reveals that Javanese values, where studied, have been examined predominantly in social-

communal and general character education contexts, with their explicit correspondence to specific twenty-first-century literacies particularly financial, scientific, and digital civic literacy remaining largely unexplored. This structural absence in the existing literature confirms the novelty and necessity of the integrative conceptual framework proposed in this article.

Synthesizing across the four themes, the findings of this study support the construction of an original conceptual framework that maps a triadic correspondence between Javanese cultural values and multidimensional twenty-first-century literacies. The framework positions *gotong royong*, *nrimo*, and *madya manggala* not as isolated cultural artifacts but as an integrated value ecosystem in which each principle addresses a distinct yet interrelated dimension of competency development. *Gotong royong* anchors the relational and participatory dimensions of social and financial literacy through its normative commitment to communal solidarity and shared accountability. “*Nrimo*” grounds the metacognitive and psychosocial dimensions of digital and scientific literacy through its cultivation of reflective equanimity, adaptive resilience, and spiritually anchored self-regulation. *Madya manggala* provides the ethical and agentic architecture for civic literacy and future leader development through its model of empowering, catalytic, and values-driven stewardship in digital environments.

This integrative framework responds directly to the epistemological critique advanced in the introduction: that dominant twenty-first-century competency models embed Eurocentric assumptions that may inadequately serve learners embedded in non-Western cultural contexts. Dasilva et al. (2023), in their systematic review of indigenous knowledge integration in schools across developing nations, confirm that indigenous culture and worldview are fundamental attributes for community identity and for making science content acquisition meaningful findings that substantiate the epistemological autonomy of the Javanese value framework proposed here. Fathurrochman (2025), in his nine-month mixed-methods study across three culturally distinct elementary schools, provides empirical proof-of-concept for the educational efficacy of local wisdom integration, documenting significant improvements in cultural understanding (Cohen’s $d = 1.15$), student engagement ($d = 1.26$), and cultural identity ($M = 3.4\text{--}4.3$), while identifying implementation challenges teacher capacity limitations, time allocation deficits, and weak community collaboration that future empirical research must address in translating this study’s conceptual framework into sustainable educational practice.

From the perspective of CRE theory, the framework proposed by this study extends the construct beyond its dominant Western application contexts into a Global South setting where indigenous values are not marginal but culturally central, yet academically marginalized. Craven et al. (2025) affirm that culturally responsive teaching, at its core,

authentically incorporates alternative ways of knowing and learning, resisting Eurocentric content and approaches as the exclusive normative standard a principle this study operationalizes by constructing Javanese values not as supplements to Western competency frameworks but as their epistemological peers. Prihantoro & Tebbett (2025) reinforce this epistemological positioning by demonstrating that integrating local knowledge into higher education curricula constitutes a paradigm of ways of knowing and being that challenges dominant Eurocentrism while promoting cultural identity, linguistic preservation, and context-sensitive problem-solving. Maguire et al. (2024), in their systematic review of pedagogical practices for integrating indigenous knowledge systems in science teaching, further establish that such integration simultaneously facilitates content learning and supports indigenous students' cultural identities and sense of classroom belonging outcomes that align precisely with the multidimensional competency goals articulated in this study's framework.

The framework's contribution to the future leaders discourse is equally significant. Brooks et al. (2024), in their study of blended-learning approaches to character and leadership education at the University of Hong Kong, demonstrate that culturally grounded leadership education makes measurable contributions to students' intellectual understanding of leadership, leadership identity formation, and ethical development reinforcing the argument that embedding cultural values in future leader development is not a pedagogical luxury but a necessary foundation. Bellibaş et al. (2025) corroborate from the organizational leadership perspective that collectivist cultural dimensions consistently shape more ethical and accountable educational leadership practices a finding that substantively supports the *madya manggala* model as a culturally authentic, empirically grounded architecture for ethical digital leadership development. The convergence of these bodies of evidence suggests that the conceptual framework constructed in this article positioning Javanese values as an integrated epistemological foundation for multidimensional twenty-first-century literacy and future leader development represents a theoretically coherent, empirically grounded, and practically actionable contribution to the global discourse on culturally responsive education.

Nonetheless, this study acknowledges proportionate limitations that condition the scope of its claims. As a conceptual study grounded in systematic literature review, the framework remains theoretical and requires empirical validation through field-based experimental or quasi-experimental research designs. The corpus, while systematically assembled, is subject to publication bias toward positive findings regarding local wisdom integration. Furthermore,

the framework's specificity to Javanese cultural values means that generalization to Indonesia's other 300-plus ethnic traditions requires careful conceptual adaptation informed by culturally specific empirical inquiry. Future research should prioritize the empirical testing of this framework through design-based research in Javanese educational contexts, comparative cross-cultural studies exploring analogous indigenous value systems across other Indonesian ethnic traditions, and longitudinal investigations tracking the long-term effects of culturally.

Conclusion

This study has established that Javanese cultural values *gotong royong*, *nrimo*, and *madya manggala* constitute a coherent and philosophically robust epistemological foundation for the development of multidimensional twenty-first-century literacies within the Indonesian educational context. Through systematic literature review and thematic analysis, the findings demonstrate that *gotong royong* provides a culturally authentic framework for collaborative social literacy and ethically grounded financial literacy, operationalizing collective responsibility and communal resource-sharing as active competencies rather than passive cultural artifacts. *Nrimo*, reconceptualized beyond reductive interpretations as fatalistic passivism, emerges as an active disposition of reflective acceptance and adaptive resilience, offering a culturally situated pathway to digital resilience and metacognitive scientific literacy that parallels mindfulness-based approaches while remaining authentically grounded in Javanese philosophical traditions. Most significantly, the *madya manggala* principle derived from Ki Hadjar Dewantara's pedagogical trilogy articulates a distinctive model of ethical digital civic leadership that positions educators as motivational enablers rather than hierarchical authorities, addressing the critical gap between civic awareness and participatory civic agency documented in Indonesian digital citizenship contexts. These three values, when integrated systematically rather than superficially, provide the conceptual architecture for a culturally responsive competency framework that moves beyond the epistemological asymmetry characterizing dominant global competency models, challenging the universalist orientations of frameworks such as P21, DigComp, and OECD's Learning Compass by validating indigenous knowledge systems as autonomous pedagogical resources rather than supplementary cultural content.

The conceptual framework proposed in this study advances three scholarly contributions with practical implications for educational policy, curriculum design, and teacher professional development. First, by constructing explicit conceptual correspondences between Javanese values and specific literacy dimensions, it provides a reference architecture for operationalizing indigenous knowledge integration within competency-oriented curricula,

addressing the structural deficit identified in the literature wherein acknowledgment of local wisdom's value has not translated into coherent pedagogical frameworks. Second, the introduction of *madya manggala* into international academic discourse contributes a philosophically grounded model of digital civic leadership that enriches existing competency frameworks with a dimension of ethical, distributed, and community-empowering leadership that Western-derived models systematically lack. Third, by positioning future leader development within this culturally anchored framework, the study elevates educational discourse from individual character formation toward strategic development of ethically grounded, culturally situated, and globally competitive leaders capable of navigating the complexities of digital societies while maintaining cultural continuity. However, as Fathurrochman's (2025) empirical findings underscore, translating this framework into sustainable educational practice requires addressing persistent implementation challenges including teacher capacity limitations, insufficient time allocation, weak community collaboration, and inadequate institutional support. Future empirical research must therefore prioritize the development of validated instructional models, culturally responsive assessment instruments, and scalable professional development programs that can operationalize this framework across diverse Indonesian educational contexts, ensuring that the epistemological repositioning advanced in this study translates into measurable improvements in learner outcomes, teacher practice, and community engagement.

References

- Afriadi, D., & Fitri, N. (2025). From awareness to action: Rethinking high school civic education for the digital generation in Indonesia. *Cogent Education*, 12(1), Article 2534156. <https://doi.org/10.1080/2331186X.2025.2534156>
- Al-Karaki, J. N., Bdair, I., Abualigah, L., Al-Zinati, M., & Gawanmeh, A. (2025). Digital transformation in higher education for achieving sustainable development goals in conflict zones: A case study of An-Najah National University. *Frontiers in Human Dynamics*, 7, Article 1585538. <https://doi.org/10.3389/fhumd.2025.1585538>
- Andriawan, F., Suryani, D., & Putra, R. (2024). Community-based social education for sustainable development: An Indonesian perspective on collaborative learning models. *Journal Neosantara Hybrid Learning*, 3(1), 10–19.
- Andriyanto, O. D., Darni, Subandiyah, H., Hardika, M., & Sukarman. (2022). Ethic values in modern Javanese literature works: Identity and character education in the digital era. *Eurasian Journal of Applied Linguistics*, 8(3), 106–119.

- Arjaya, I. B. A., Suastra, I. W., Redhana, I. W., & Sudiatmika, A. A. I. A. R. (2024). Global trends in local wisdom integration in education: A comprehensive bibliometric mapping analysis from 2020 to 2024. *International Journal of Learning, Teaching and Educational Research*, 23(7), 120–140. <https://doi.org/10.26803/ijlter.23.7.7>
- Bellibaş, M. Ş., Karaferiye, F., & Walker, A. (2025). How cultural context shapes school leadership and its effectiveness: A systematic review. *Educational Management Administration & Leadership*. Advance online publication. <https://doi.org/10.1177/17411432251396683>
- Braun, V., & Clarke, V. (2022). *Thematic analysis: A practical guide*. SAGE.
- Brooks, E., Tse, S., Wright, J. Y., & Burdett, E. (2024). Educating future leaders to engage the challenges of a changing world: A blended-learning approach to character and leadership education at the University of Hong Kong. *Asia Pacific Education Review*, 25(3), 1–18. <https://doi.org/10.1007/s11233-024-09138-1>
- Craven, R., Yeung, A. S., Munns, G., Mooney, J., & Gillon, G. (2025). A framework for teachers' culturally responsive teaching beliefs: Links to motivation to teach Aboriginal curriculum and relationships with Aboriginal students. *Teaching and Teacher Education*, 162, Article 104839. <https://doi.org/10.1016/j.tate.2025.104839>
- Dasilva, C., Pereira, F., & Amorim, J. P. (2023). The integration of indigenous knowledge in school: A systematic review. *Compare: A Journal of Comparative and International Education*, 53(8), 1210–1228. <https://doi.org/10.1080/03057925.2023.2184200>
- Fathurrochman, M. F. (2025). Integration of local wisdom in elementary school local content curriculum: A study in rural areas of Indonesia. *The Curriculum Journal*. Advance online publication. <https://doi.org/10.1002/curj.70029>
- Haviv, M., Maris, I. M., Anwar, A., Bakar, L., Aziz, D., & Fudholi, A. (2026). A systematic literature review on the integration of indigenous knowledge systems (IKS) into STEM education. *Humanities and Social Sciences Communications*, 13, Article 07227. <https://doi.org/10.1038/s41599-026-07227-7>
- Iskandar, R., Maksum, A., & Marini, A. (2025). Digital citizenship literacy in Indonesia: The role of privacy awareness and social campaigns. *Social Sciences & Humanities Open*, 12, Article 101697. <https://doi.org/10.1016/j.ssaho.2025.101697>
- Khoiruddin, M., Syaharuddin, S., Mandailina, V., Abbdillah, A., & Mahsup, M. (2025). Ki Hajar Dewantara's Among System and mobile seamless learning in Islamic religious education: A conceptual study. *Ma'alim: Jurnal Pendidikan Islam*, 6(1), 1–15.

- Koutsogiannopoulou, E., Bampasidis, G., & Katsantonis, I. (2023). Education 4.0: Competencies for the 21st century and new educational models. *Education Sciences*, 13(9), Article 921. <https://doi.org/10.3390/educsci13090921>
- Lohr, L. (2025). Digital literacy and access: Equity from a global and local perspective. *New Directions for Adult and Continuing Education*, 2025(185), 47–58. <https://doi.org/10.1002/ace.20559>
- Lubis, S. P. W., Suryadarma, I. G. P., Paidi, & Yanto, B. E. (2022). The effectiveness of problem-based learning with local wisdom oriented to socio-scientific issues. *International Journal of Instruction*, 15(2), 455–472. <https://doi.org/10.29333/iji.2022.15225a>
- Maguire, M., Faulkner, J., & White, E. (2024). A systematic review of pedagogical practices for integrating indigenous knowledge systems in science teaching. *African Journal of Research in Mathematics, Science and Technology Education*, 28(1), 1–15. <https://doi.org/10.1080/18117295.2024.2374133>
- Marzi, G., Caputo, A., Pellegrini, M. M., & Rialti, R. (2025). Guidelines for bibliometric-systematic literature reviews: 10 steps to combine analysis, synthesis and theory development. *International Journal of Management Reviews*. Advance online publication. <https://doi.org/10.1111/ijmr.12381>
- Morgan, H. (2022). Conducting a qualitative document analysis. *The Qualitative Report*, 27(1), 64–77.
- Naeem, M., Ozuem, W., Howell, K., & Ranfagni, S. (2023). A step-by-step process of thematic analysis to develop a conceptual model in qualitative research. *International Journal of Qualitative Methods*, 22, 1–18. <https://doi.org/10.1177/16094069231205789>
- OECD. (2024). *Transforming education in Indonesia: Examining the curriculum reform*. OECD Publishing.
- Okunlola, J. O., Naicker, S. R., Adewale, S., Adeoye, M. A., Obied, A., & Valentine, E. (2025). Digital leadership in education: A bibliometric analysis of research trends from 1993 to 2024. *F1000Research*, 14, Article 166667. <https://doi.org/10.12688/f1000research.166667.2>
- Ouyang, S., Zhang, W., Xue, L., Mat Rashid, A., How, S. P., & Hassan, A. B. (2025). The cultural compass: A systematic review on cultural dimensions theory in educational settings. *SAGE Open*, 15(2). <https://doi.org/10.1177/21582440251342160>

- Page, M. J., McKenzie, J. E., Bossuyt, P. M., et al. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ*, 372, n71. <https://doi.org/10.1136/bmj.n71>
- Palacios-Rodríguez, A., Llorente-Cejudo, C., & Cabero-Almenara, J. (2023). Editorial: Educational digital transformation: New technological challenges for competence development. *Frontiers in Education*, 8, Article 1267939. <https://doi.org/10.3389/feduc.2023.1267939>
- Parhan, M., & Dwiputra, D. F. K. (2023). A systematic literature review on local wisdom actualization in character education to face the disruption era. *Journal of Innovation in Educational and Cultural Research*, 4(3), 312–322.
- Prihantoro, A., & Tebbett, N. (2025). Integrating local knowledge into higher education: A qualitative study of curriculum innovation in Aceh, Indonesia. *Education Sciences*, 15(9), Article 1214. <https://doi.org/10.3390/educsci15091214>
- Purwanto, A., Asbari, M., & Santoso, P. B. (2022). Interactive components of digital MSMEs ecosystem for inclusive digital economy in Indonesia. *Heliyon*, 8(10), Article e11084. <https://doi.org/10.1016/j.heliyon.2022.e11084>
- Rahiem, M. D. H. (2025). Shifting collective values: The role of rural women and gotong royong in village fund policy. *Humanities and Social Sciences Communications*, 12(1), Article 04577. <https://doi.org/10.1057/s41599-025-04577-6>
- Ramadhan, R., Haryanti, N. H., Widiastuti, I., & Sulisty, T. (2024). Revitalizing local wisdom within character education through ethnopedagogy approach: A case study on a preschool in Yogyakarta. *Heliyon*, 10(10), Article e31370. <https://doi.org/10.1016/j.heliyon.2024.e31370>
- Sihombing, J., Festiyed, F., Asrizal, A., Razak, A., & Juanta, P. (2025). Ethnoscience and local wisdom in science education for conservation: A systematic review with bibliometric mapping. *Journal of Natural Science and Integration*, 8(1), 57–74.
- Steele, C., Gower, G., & Bogachenko, T. (2024). Creating and enacting culturally responsive assessment for First Nations students in higher education settings. *The Australian Educational Researcher*, 51(5), 1–22. <https://doi.org/10.1177/00049441241258496>
- Sun, H., Yuan, C., Qian, Q., He, S., & Luo, Q. (2022). Digital resilience among individuals in school education settings: A concept analysis based on a scoping review. *Frontiers in Psychiatry*, 13, Article 858515. <https://doi.org/10.3389/fpsyt.2022.858515>
- Suprpto, N., Rizki, I. A., Saphira, H. V., Alfarizy, Y., & Jannah, S. N. (2024). Exploration of science concepts in Indonesian indigenous culture: Actualization of the

- Indonesian curriculum. *Journal of Turkish Science Education*, 21(3), 410–429.
<https://doi.org/10.36681/tused.2024.022>
- Supriadi, S., Sujatmika, S., & Triyanto, T. (2025). Development of a literacy leadership model based on Ki Hadjar Dewantara's leadership trilogy at Tamansiswa College. *Jurnal Pendidikan Progresif*, 15(1), 1–18.
- Suryadi, R., Oktaviana, L., Herwiyanto, H., & Nurhayati, N. (2025). Resilience of MSMEs in Surakarta City: Integrating digital transformation and local economic resilience based on Javanese cultural values. *Priviet Social Sciences Journal*, 5(1), 1–18.
- Tan, C. Y. (2024). Influence of cultural values on Singapore school leadership. *Educational Management Administration & Leadership*, 52(3), 521–540.
<https://doi.org/10.1177/17411432211073414>
- Villamin, C. M. C. (2025). A worked example of qualitative descriptive design: A step-by-step guide for novice and early career researchers. *Journal of Advanced Nursing*, 81(3), 1–12. <https://doi.org/10.1111/jan.16481>