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Reconceptualizing Cultural Character Education: Integrating Futuristic Pedagogy for Generation Alpha's Local Cultural Preservation

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Abstract
Generation Alpha, born entirely within the digital ecosystem, faces unprecedented challenges in maintaining connection to local cultural heritage while navigating technology-saturated learning environments. This study explores how futuristic pedagogy can effectively cultivate love for local culture among Generation Alpha students in elementary education. A systematic literature review analyzed 47 peer-reviewed publications from 2020-2025, employing purposive sampling and Miles and Huberman's analytical framework comprising data collection, presentation, reduction, and conclusion drawing. Three critical findings emerged: futuristic pedagogy encompasses six interconnected elements balancing technological competencies with character development; Generation Alpha exhibits seven distinctive characteristics including productive global-local cultural tension; and technology-enhanced strategies, particularly augmented reality applications, effectively bridge digital engagement with cultural authenticity. Analysis revealed that successful cultural character education requires intentional integration of immersive technologies, gamified learning, digital storytelling, and collaborative projects that position students as cultural co-creators. The findings reconceptualize cultural character education as digitally mediated process requiring strategic integration of technological, cultural, and developmental dimensions. While technology contributes to cultural displacement, appropriately designed digital learning experiences can serve as powerful tools for cultural preservation. Future research should conduct longitudinal studies establishing causal relationships and investigate adaptations for diverse Indonesian contexts.

INTRODUCTION

Character education has long been recognized as a fundamental pillar in shaping the future of nations, serving as a critical mechanism for cultivating citizens capable of navigating complex social, cultural, and technological landscapes (Firdaus & Suwendi, 2025). In the Indonesian context, character formation assumes particular significance as the nation strives toward its vision of a developed and prosperous society by 2045. Contemporary educational systems, however, face unprecedented challenges in fostering character development that demands intentional strategies aligned with 21st-century realities (Esnati & Mukeredzi, 2023). These challenges are particularly acute when addressing Generation Alpha—children born after 2010—who represent the first cohort to grow up entirely within the digital ecosystem of the 21st century (Dwistia et al., 2024; McCrindle & Wolfinger, 2020). This generation exhibits distinctive learning characteristics shaped by pervasive exposure to digital technologies, social media, and global cultural flows, necessitating innovative pedagogical approaches that can effectively integrate traditional values with contemporary learning modalities (Astapenko et al., 2021; Silaban et al., 2025).

The emergence of Generation Alpha coincides with an era of rapid globalization and digital transformation that fundamentally challenges the transmission of local cultural values. Unlike previous generations, Alpha children develop their worldviews in environments saturated with global cultural content accessible through smartphones, tablets, and ubiquitous internet connectivity (Swargiary, 2024). Dubbed the "Screenagers Generation" (Drugas, 2022), these truly digital-native learners are both shaping and being shaped by an always-on digital world (Ni, 2025). This unprecedented exposure creates a paradoxical situation where young learners possess sophisticated technological competencies yet demonstrate diminishing connections to their local cultural heritage. Research indicates that Indonesian youth increasingly orient their preferences toward foreign cultural expressions—including music, language, and lifestyle patterns—resulting in the gradual erosion of appreciation for indigenous cultural practices (Panamuan et al., 2025; Oktaviasary et al., 2024). This cultural displacement phenomenon, exacerbated by globalization's influence on traditional ideologies (Yankuzo, 2014) and economic pressures causing erosion of place identity (Jalal, 2023), poses significant risks to national identity formation and the preservation of Indonesia's rich diversity of local wisdom, traditional knowledge, and cultural practices.

Within this context, the cultivation of love for local culture among Generation Alpha students emerges as both an educational imperative and a national priority. Local culture embodies noble values, traditional wisdom, and the unique identity of communities that must be preserved and transmitted to successive generations (D'Andrea & D'Ulizia, 2023). The involvement of younger generations is essential in maintaining local cultural traditions through intergenerational knowledge transfer (Devismes, 2013), while digital archiving and ICT integration have emerged as blueprints for cultural preservation (Shiri et al., 2021; Urbaite, 2024). The internalization of these cultural values during elementary education is crucial for fostering pride, ownership, and responsibility toward cultural heritage while simultaneously building resilience against the homogenizing effects of global culture. However, conventional pedagogical approaches designed for previous generations prove inadequate for engaging Alpha learners, who demonstrate strong preferences for visual, interactive, and personalized learning experiences that provide immediate feedback and gamified elements (Bandara et al., 2024; dos Reis, 2018; Putri et al., 2024). Professional development programs have become essential for teachers to understand diverse instructional techniques appropriate for this generation (Jukić & Škojo, 2021; Miller, 2023).

Current scholarly discourse on character education acknowledges the urgent need for pedagogical innovation, yet significant knowledge gaps remain regarding the effective integration of digital technologies for cultural value transmission. While extensive literature exists on futuristic pedagogy's potential to develop 21st-century skills—including critical thinking, creativity, collaboration, and communication (Galeboe et al., 2025; Hwang et al., 2020; Wagner, 2024)—comparatively limited research has explored how these innovative approaches, including AI-powered customization (Capinding & Dumayas, 2024) and meta-learning capabilities (Wang, 2021), can specifically enhance cultural character formation among elementary school students. Furthermore, existing studies predominantly focus on cognitive and technical competencies, often neglecting the socio-emotional and cultural dimensions essential for comprehensive character development. This scholarly lacuna is particularly pronounced in the Indonesian context, where the intersection of futuristic pedagogy, Generation Alpha characteristics, and local cultural preservation remains underexplored.

Futuristic pedagogy offers promising solutions through its emphasis on personalized learning, project-based inquiry, meaningful technology integration, and the development of both cognitive and socio-emotional competencies (Hadiansyah et al., 2023). Technologies such as augmented reality (AR) and virtual reality (VR) present unique opportunities to create immersive learning experiences that bridge physical and digital realms, potentially making cultural content more engaging and accessible for digital-native learners (Anwar et al., 2022; Checa-Domene et al., 2024; Lin et al., 2024; Putra et al., 2024). Wearable immersive AR/VR technologies have demonstrated enhanced ease of use and the ability to facilitate physical interaction with virtual objects (Sun et al., 2023), while the global AR

market in education is projected to grow from $10.37 billion in 2022 to $68.71 billion by 2026 (Research & Markets, 2023). However, the practical implementation of these technologies for cultural character education requires systematic investigation, including appropriate AI-driven pedagogies (Cavalcanti et al., 2021; Vazhayil et al., 2019) and hybrid models of human-AI interaction (Molenaar, 2022a, 2022b), to determine optimal strategies, identify potential challenges, and establish evidence-based guidelines for educators.

This research addresses these critical gaps by exploring the potential and implementation of futuristic pedagogy in cultivating love for local culture among Generation Alpha students at the elementary school level. By examining the convergence of contemporary pedagogical approaches, generational learning characteristics, and cultural education objectives, this research contributes to the theoretical understanding of culturally responsive futuristic pedagogy while providing practical insights for educational practitioners. The findings hold significance not only for Indonesian educational contexts but also for broader international discussions on balancing technological innovation with cultural preservation in elementary education, particularly as education systems worldwide must address growing diversity and equity strategies (Cerna et al., 2021; OECD, 2023) while preserving cultural heritage amid globalization (Boussebaa, 2021; Zalli, 2024). Through this investigation, the study seeks to illuminate pathways for developing educational approaches that equip Generation Alpha with both the technological competencies required for future success and the cultural grounding necessary for maintaining distinct national and local identities in an increasingly globalized world.

METHODS

This study employed a qualitative research design utilizing a systematic literature review approach to explore the potential and implementation of futuristic pedagogy in cultivating love for local culture among Generation Alpha students at the elementary school level. The qualitative paradigm was deemed most appropriate for this investigation as it enables the comprehensive understanding and interpretation of complex social and educational phenomena through in-depth analysis of existing scholarly discourse (Creswell, 2014). This methodological choice aligns with the study's exploratory nature and its aim to synthesize diverse perspectives on the intersection of contemporary pedagogy, generational characteristics, and cultural education.

The research population comprised scholarly literature published between 2020 and 2025, focusing on three primary domains: futuristic pedagogy and innovative educational approaches, Generation Alpha characteristics and learning preferences, and local cultural preservation in educational contexts. The temporal scope was deliberately selected to capture the most recent developments in these rapidly evolving fields, ensuring the relevance and currency of findings. Purposive sampling was employed to identify relevant literature, with inclusion criteria encompassing peer-reviewed journal articles, conference proceedings, and academic books that directly addressed one or more of the study's key themes. Publications were required to be written in English or Indonesian and demonstrate methodological rigor in their research design. Exclusion criteria eliminated opinion pieces, non-academic sources, and studies focusing exclusively on secondary or higher education contexts without implications for elementary education.

Data collection proceeded through a systematic multi-stage process designed to ensure comprehensiveness and methodological rigor. The initial phase involved identifying pertinent research problems and formulating specific research questions aligned with the study objectives. Subsequently, an extensive literature search was conducted using multiple academic databases and search engines, employing carefully constructed search strings combining keywords such as "futuristic pedagogy," "Generation Alpha," "character education," "local culture," "augmented reality," and "elementary education." Retrieved documents were catalogued systematically, and their bibliographies were examined to identify additional relevant sources through snowball sampling techniques. Throughout

this process, particular attention was paid to seminal works and recent empirical studies that could provide robust theoretical frameworks and practical insights.

The analytical process followed the established procedures outlined by Miles and Huberman (in Rijali, 2018), comprising four iterative stages: data collection, data presentation, data reduction, and conclusion drawing. During data presentation, key information from each source was organized thematically according to the study's conceptual framework. Data reduction involved critically evaluating the relevance and quality of collected materials, identifying patterns and relationships across sources, and synthesizing findings into coherent themes. The conclusion drawing phase integrated insights from multiple sources to address the research questions and develop a comprehensive understanding of how futuristic pedagogy can effectively cultivate cultural appreciation among Generation Alpha learners. To enhance the trustworthiness of findings, the researchers employed investigator triangulation, with multiple researchers independently reviewing and analyzing key sources before reaching consensus on interpretations. Additionally, an audit trail documented all methodological decisions, ensuring transparency and enabling verification of the analytical process. This rigorous approach facilitated the identification of knowledge gaps, emerging trends, and practical implications for implementing culturally responsive futuristic pedagogy in elementary education settings.

RESULTS AND DISCUSSION

Results

The systematic literature review yielded comprehensive insights into the convergence of futuristic pedagogy, Generation Alpha characteristics, and local cultural preservation in elementary education. Analysis of 47 peer-reviewed publications from 2020-2025 revealed three primary thematic clusters that directly address the research objectives: (1) conceptual foundations of futuristic pedagogy and its core elements; (2) distinctive learning characteristics of Generation Alpha that necessitate pedagogical innovation; and (3) strategies for cultivating love for local culture through technology-enhanced learning. These findings collectively illuminate pathways for implementing culturally responsive futuristic pedagogy in contemporary elementary education contexts.

Table 1. Core Elements of Futuristic Pedagogy in Elementary Education

Core Element	Key Characteristics	Educational Implications	Supporting Sources
Personalized Learning	Adaptation to individual learning styles (auditory, kinesthetic, visual); customized pace and content	Maximizes student engagement and comprehension through tailored approaches	Bire et al., 2014; Hadiansyah et al., 2023
Project-Based & Inquiry Learning	Active knowledge construction; real-world problem solving; student-driven investigation	Develops critical thinking, creativity, and collaboration skills essential for 21st century	Sholeh et al., 2024; Hwang et al., 2020; Galeboe et al., 2025
Meaningful Technology Integration	Strategic use of digital platforms, AR/VR, and immersive technologies beyond mere tools	Creates engaging, interactive, and contextually relevant learning experiences	Putra et al., 2024; Sun et al., 2023; Checa-Domene et al., 2024
21st Century Skills Development	Focus on critical thinking, problem-solving, creativity, communication, collaboration, and digital literacy	Prepares students for complex, technology-driven global future	Khusna et al., 2023; Wagner, 2024; Ng et al., 2023
Flexible & Adaptive Learning	Accommodation of various learning modalities; dynamic educational practices responsive to needs	Supports diverse learners and promotes student agency	Fauziyah et al., 2024; Molenaar, 2022a; Wang, 2021
Character & Social-Emotional Development	Integration of values education, empathy, resilience, and social skills alongside cognitive learning	Produces well-rounded individuals capable of ethical decision-making and social contribution	Saripah et al., 2025; Firdaus & Suwendi, 2025

The first major finding pertains to the conceptualization of futuristic pedagogy as a comprehensive educational framework that transcends mere technological adoption. Table 1 presents the core elements of futuristic pedagogy identified across the reviewed literature, synthesizing insights from multiple theoretical and empirical sources.

As illustrated in Table 1, futuristic pedagogy emerges as a multidimensional framework encompassing six interconnected elements that collectively address the holistic development of learners. Notably, the integration of character and social-emotional development alongside cognitive and technological competencies represents a significant departure from traditional skill-focused pedagogies. This finding suggests that effective futuristic pedagogy must balance instrumental competencies with humanistic values, particularly when applied to cultural education contexts. The emphasis on meaningful technology integration, as opposed to superficial adoption, underscores the need for intentional pedagogical design that leverages technology to enhance rather than replace fundamental educational processes.

The second major finding reveals distinctive characteristics of Generation Alpha that fundamentally shape their learning preferences and engagement patterns. Analysis of the literature identified seven defining attributes that differentiate this cohort from previous generations, as synthesized in Table 2.

Table 2. Distinctive Characteristics of Generation Alpha and Educational Implications

Characteristic	Description	Learning Preferences	Pedagogical Responses	Supporting Sources
Digital Nativity	Born into fully digital ecosystem; intuitive technology use since infancy	Seamless integration of digital tools; preference for technology-mediated learning	Provide authentic digital learning experiences; avoid artificial separation of technology and learning	McCrindle & Wolfinger, 2020; Astapenko et al., 2021; Drugas, 2022
Visual & Interactive Orientation	Strong preference for visual content, interactive media, and multimedia experiences	Learn effectively through graphics, videos, simulations, and hands-on activities	Utilize AR/VR, infographics, interactive platforms, and visual storytelling	Putri et al., 2024; Bandara et al., 2024
Instant Gratification Expectation	Accustomed to immediate feedback and rapid information access	Short attention spans; need for quick responses and visible progress	Implement gamification, microlearning modules, and frequent formative assessments	Cheng, 2025; Faisal Anwar, 2022; Petti et al., 2025;
Collaborative & Social Learning	Socialized through multiplayer games and social media platforms	Thrive in group work; value peer interaction and shared experiences	Design collaborative projects and social learning opportunities	Jukić & Škojo, 2021; Miller, 2023
Desire for Autonomy	Resistance to restrictive rules; preference for self-directed exploration	Want choices in learning paths and methods; value independence	Offer personalized learning pathways and student agency in decision-making	dos Reis, 2018; Dwistia et al., 2024; Fauziyah et al., 2024;
High Self-Confidence	Strong self-esteem; comfort with self-expression and visibility	Willing to share work and ideas; open to public presentation	Create safe spaces for expression while developing critical self-reflection	Faisal Anwar, 2022; Devianti et al., 2023
Global-Local Tension	Exposure to global culture while potentially disconnected from local traditions	Risk of cultural displacement; need for intentional cultural grounding	Integrate local cultural content using engaging digital formats	Jalal, 2023; Oktaviasary et al., 2024; Panamuan et al., 2025

The data in Table 2 reveals a critical tension inherent in Generation Alpha's developmental context: while their technological fluency offers unprecedented opportunities for innovative learning, their diminishing connection to local cultural traditions poses significant challenges for cultural education. This finding emerged consistently across multiple sources, with particular emphasis on the

"global-local tension" characteristic. The literature suggests that this cohort's preference for visual, interactive, and instantly gratifying content—while potentially problematic for traditional pedagogical approaches—can be strategically leveraged to make cultural education more engaging when appropriately designed.

An unexpected finding emerged regarding the dual nature of technology's role in Generation Alpha's cultural development. While technology contributes to cultural displacement through exposure to global content, the literature simultaneously positions technology as a potential solution for cultural preservation and transmission. This paradox suggests that the medium itself is neutral; rather, pedagogical intentionality and content design determine whether technology serves as a tool for cultural erosion or cultural revitalization.

The third major finding identifies specific strategies for cultivating love for local culture among Generation Alpha students through technology-enhanced learning approaches. Table 3 synthesizes evidence-based strategies extracted from the reviewed literature, organized by implementation level and expected outcomes.

Table 3. Technology-Enhanced Strategies for Cultural Character Education

Strategy Category	Specific Approaches	Implementation Methods	Expected Outcomes	Supporting Sources
Immersive Technology Integration	AR applications for cultural visualization; VR cultural site visits; 3D animations of traditions	Develop AR apps displaying local cultural practices; create VR experiences of cultural ceremonies and historical sites	Enhanced engagement and retention; emotional connection to cultural content	Sari et al., 2024; Arsiva et al., 2024; Sun et al., 2023; Lin et al., 2024
Gamified Cultural Learning	Discovery-based learning games; cultural quest challenges; achievement systems	Design game-based learning modules where students complete cultural missions and earn recognition	Sustained motivation; intrinsic interest in cultural exploration	Petti et al., 2025; Cheng, 2025
Digital Storytelling & Documentation	Student-created digital narratives about local culture; multimedia cultural portfolios	Guide students in interviewing elders, documenting traditions, creating digital stories	Active participation in cultural preservation; intergenerational connection	D'Andrea & D'Ulizia, 2023; Shiri et al., 2021; Urbaite, 2024
Collaborative Cultural Projects	Group investigations of local traditions; peer-taught cultural practices	Organize collaborative projects exploring different aspects of local culture with presentations	Social learning and collective knowledge construction	Sholeh et al., 2024; Miller, 2023
AR-Enhanced Values Education	AR content integrating Pancasila values with cultural contexts; visual representation of abstract values	Create AR experiences linking cultural practices to character values (responsibility, social care, nationalism)	Internalization of cultural values and character development	Sendana et al., 2024; Saripah et al., 2025
Personalized Cultural Learning Paths	Adaptive platforms allowing student choice in cultural topics; differentiated cultural activities	Develop learning management systems offering multiple pathways for cultural exploration based on interests	Increased student agency and ownership of cultural learning	Capinding & Dumayas, 2024; Molenaar, 2022a; dos Reis, 2018

The strategies presented in Table 3 reveal a coherent pedagogical approach that leverages Generation Alpha's technological fluency and learning preferences to facilitate cultural engagement. Notably, the most frequently cited strategies—immersive technology integration and gamified cultural learning—align directly with Generation Alpha's identified characteristics of visual orientation, interactive preferences, and expectation for immediate gratification. This convergence suggests that

effective cultural education for this generation requires transformation of traditional cultural content into formats that resonate with their digital-native sensibilities.

A particularly significant finding concerns the role of AR technology as a bridge between physical and digital cultural experiences. The literature consistently emphasized AR's unique capacity to overlay digital cultural information onto physical environments, creating what researchers term "augmented cultural reality" (Arsiva et al., 2024; Sari et al., 2024). This approach allows students to experience local culture in contextually authentic ways while simultaneously benefiting from the engagement advantages of digital media. The integration of AR with values education, specifically through Pancasila Education content, represents an innovative application that addresses both character formation and cultural preservation objectives simultaneously.

Another unexpected finding relates to the emphasis on student-generated cultural content rather than passive cultural consumption. Multiple sources highlighted the importance of positioning Generation Alpha students as active cultural documentarians and storytellers rather than mere recipients of cultural knowledge (D'Andrea & D'Ulizia, 2023; Shiri et al., 2021). This participatory approach not only aligns with Generation Alpha's desire for autonomy and self-expression but also transforms cultural learning from abstract information transfer to personally meaningful engagement. The creation of digital cultural artifacts by students serves the dual purpose of deepening individual understanding while contributing to broader cultural preservation efforts.

The synthesis of findings across all three thematic areas reveals a critical insight: successful cultivation of cultural love among Generation Alpha requires pedagogical approaches that are simultaneously technologically sophisticated, culturally grounded, and developmentally appropriate. The literature suggests that neither technology alone nor traditional cultural education methods are sufficient; rather, the intentional integration of both—guided by deep understanding of Generation Alpha's characteristics—offers the most promising pathway forward. This integration must be implemented thoughtfully, with explicit attention to avoiding superficial technological enhancement of cultural content in favor of creating genuinely immersive, interactive, and meaningful cultural learning experiences that resonate with digital-native learners while fostering authentic appreciation for local cultural heritage.

Discussion

The findings of this systematic literature review illuminate critical pathways for addressing the central research question: how can futuristic pedagogy effectively cultivate love for local culture among Generation Alpha students in elementary education? The synthesis of 47 scholarly sources reveals that successful cultural character education for this cohort requires a fundamental reconceptualization of pedagogical approaches—one that embraces technology not as a supplementary tool but as an integral medium through which cultural meaning is constructed and transmitted in the 21st century.

The first major finding—the multidimensional nature of futuristic pedagogy—confirms and extends existing theoretical frameworks while revealing important tensions in educational practice. Hadiansyah et al. (2023) and Hwang et al. (2020) established futuristic pedagogy's theoretical foundations emphasizing technological integration and 21st-century skills development. However, this study's findings contribute a crucial addition: the explicit integration of character and social-emotional development as a core element rather than a peripheral concern. This finding challenges the implicit assumption in much of the educational technology literature that character formation and technological competency development represent separate educational domains (Galeboe et al., 2025; Herlambang, 2018; Ng et al., 2023). Instead, the evidence suggests these domains must be deliberately integrated, particularly in cultural education contexts where values transmission and technological engagement must occur simultaneously.

This integration addresses what Esnati and Mukeredzi (2023) identify as the central challenge of contemporary character education: adapting traditional values education to digital-era learning

modalities without compromising the depth and authenticity of character formation. The reviewed literature suggests that technologies such as AR and VR, when thoughtfully designed, can actually enhance rather than diminish character education by creating immersive experiences that foster empathy, cultural understanding, and values internalization in ways that static, text-based approaches cannot achieve (Checa-Domene et al., 2024; Lin et al., 2024). However, this potential remains largely unrealized in current practice, representing a significant gap between pedagogical possibility and educational implementation.

The second major finding regarding Generation Alpha's distinctive characteristics both confirms and nuances existing generational research. The identification of digital nativity, visual orientation, and instant gratification expectations aligns with McCrindle and Wolfinger's (2020) foundational work on Generation Alpha. However, this study reveals a more complex picture through the identification of the "global-local tension" as a defining characteristic with profound implications for cultural education. While previous research has documented Generation Alpha's global cultural exposure (Drugas, 2022), this synthesis reveals how this exposure creates an active tension rather than simple displacement—a dynamic struggle between global cultural fluency and local cultural grounding that educational interventions must navigate rather than resolve.

This finding challenges deficit-oriented perspectives that frame Generation Alpha's global cultural orientation as inherently problematic (Oktaviasary et al., 2024). Instead, the literature suggests viewing this tension as productive—a generative space where carefully designed pedagogical interventions can help students develop what might be termed "cultural bilingualism": the capacity to navigate both global and local cultural contexts with sophistication and appreciation. This conceptualization aligns with Cerna et al. (2021) and the OECD's (2023) work on diversity in education, which emphasizes the importance of developing students' capacity to bridge rather than choose between different cultural contexts.

The unexpected finding regarding technology's dual role—as both cause of and solution to cultural displacement—merits particular attention. This apparent paradox reveals a crucial insight: technology itself is culturally neutral; its effects depend entirely on intentional design choices made by educators and content developers. When technology delivers global commercial culture optimized for engagement without pedagogical purpose, it contributes to cultural erosion (Jalal, 2023; Panamuan et al., 2025). However, when technology is deliberately designed to deliver local cultural content using formats that leverage Generation Alpha's digital fluency, it becomes a powerful tool for cultural preservation and transmission (Shiri et al., 2021; Urbaite, 2024). This finding has profound implications: rather than resisting technology in cultural education, educators must become sophisticated designers of culturally grounded digital learning experiences.

The third major finding—specific strategies for technology-enhanced cultural education—offers concrete pathways for implementation while revealing important gaps in current practice. The prominence of AR technology in the reviewed literature (Arsiva et al., 2024; Sari et al., 2024; Sun et al., 2023) reflects both technological maturity and pedagogical appropriateness for elementary-aged learners. AR's capacity to overlay cultural information onto physical environments creates what this study terms "augmented cultural reality"—learning experiences that maintain connection to authentic cultural contexts while providing digital enhancement that engages Generation Alpha learners. This approach addresses concerns raised by Harrison (2024) regarding VR's potential to create overly abstracted learning environments disconnected from lived cultural reality.

However, a critical gap emerges between the documented potential of these strategies and evidence of their effective implementation. While the literature provides compelling theoretical rationales and pilot studies demonstrating feasibility, rigorous empirical evidence evaluating these approaches' long-term effectiveness in cultivating genuine cultural appreciation remains limited. Most reviewed studies focused on engagement metrics and short-term knowledge acquisition rather than the development of sustained cultural love and commitment—the ultimate goal of character education in this domain. This gap represents a crucial direction for future research: moving beyond proof-of-

concept studies to longitudinal investigations examining whether technology-enhanced cultural education produces lasting changes in students' cultural identity, values, and behaviors.

The finding emphasizing student-generated cultural content challenges traditional models positioning students as passive recipients of cultural knowledge. D'Andrea and D'Ulizia (2023) and Devismes (2013) demonstrate that intergenerational cultural transmission becomes more meaningful when young people actively participate in documenting and interpreting cultural traditions. This participatory approach transforms cultural education from top-down knowledge transfer to collaborative knowledge construction—a shift with important implications for both pedagogical practice and cultural preservation efforts. By positioning Generation Alpha students as cultural documentarians using digital tools, educators can leverage students' technological competencies while fostering genuine investment in cultural preservation. This approach also addresses the autonomy and self-expression needs identified as central to Generation Alpha's learning preferences (dos Reis, 2018; Dwistia et al., 2024).

This study contributes several important theoretical insights to the emerging field of culturally responsive futuristic pedagogy. First, it establishes that effective cultural character education in the digital age requires integration of technological, cultural, and developmental dimensions within a unified pedagogical framework rather than treating these as separate educational concerns. Second, it reframes the relationship between technology and culture in education from opposition to integration, challenging both technophobic and techno-utopian perspectives. Third, it positions Generation Alpha's global-local cultural tension as a productive pedagogical space rather than a problem requiring resolution, suggesting new directions for multicultural and intercultural education theory.

Practically, these findings suggest several concrete implications for elementary educators and curriculum developers. Educational institutions must invest in developing teachers' technological pedagogical content knowledge specifically for cultural education—a distinct competency requiring understanding of both Generation Alpha's learning characteristics and culturally appropriate technology applications (Cavalcanti et al., 2021; Vazhayil et al., 2019). Schools should prioritize AR technology adoption for cultural education given its demonstrated capacity to bridge physical and digital learning while maintaining cultural authenticity. Curriculum designers should emphasize student-generated cultural documentation projects that leverage digital tools to facilitate meaningful intergenerational engagement. Finally, education policymakers should recognize that effective cultural preservation in the digital age requires substantial investment in developing high-quality, culturally grounded digital learning resources rather than relying on traditional methods that fail to engage digital-native learners.

Several limitations constrain this study's findings and interpretations. First, the literature review methodology, while systematic and comprehensive, cannot establish causal relationships between pedagogical approaches and educational outcomes—a limitation inherent to synthesis research. Second, the reviewed literature demonstrates significant geographic and cultural concentration, with most empirical studies conducted in developed nations with substantial educational technology infrastructure. The transferability of findings to resource-constrained contexts, including many Indonesian elementary schools, remains uncertain. Third, the temporal scope (2020-2025) captures recent developments but may miss important historical context from earlier educational technology research.

These limitations suggest several crucial directions for future research. Longitudinal experimental studies are needed to establish causal evidence for technology-enhanced cultural education's effectiveness in developing sustained cultural appreciation and identity. Comparative international research should investigate how cultural, economic, and infrastructural contexts shape the viability and effectiveness of futuristic pedagogical approaches. Research is particularly needed in the Indonesian context, examining how these approaches can be adapted to diverse local cultures across the archipelago while accounting for significant variations in technological access and teacher capacity. Finally, research should investigate potential unintended consequences of technology-

mediated cultural education, including the risk of reducing rich cultural practices to simplified digital representations.

This systematic review establishes that futuristic pedagogy offers significant potential for addressing the critical challenge of cultivating cultural love among Generation Alpha elementary students, but this potential remains largely unrealized in current educational practice. The convergence of Generation Alpha's digital nativity, futuristic pedagogy's technological sophistication, and the urgent need for cultural preservation creates a unique historical moment—what might be termed a "pedagogical window" for cultural education innovation. However, realizing this potential requires more than technological adoption; it demands fundamental reconceptualization of cultural education as an active, participatory, digitally mediated process of meaning-making that engages Generation Alpha students as cultural co-creators rather than passive inheritors.

The synthesis of findings reveals that successful approaches must navigate three critical tensions: between global exposure and local grounding, between technological engagement and cultural authenticity, and between innovation and preservation. Rather than resolving these tensions through binary choices, effective pedagogy must embrace them as productive spaces for developing students' capacity for cultural complexity and nuance. The path forward requires collaboration among technology developers, cultural experts, and educational practitioners to create learning experiences that are simultaneously technologically sophisticated, culturally authentic, pedagogically sound, and developmentally appropriate for Generation Alpha learners.

Ultimately, this research affirms that the future of cultural education lies not in resisting technological change or abandoning traditional values, but in thoughtfully integrating both within pedagogical frameworks that honor cultural heritage while embracing the digital contexts in which contemporary children live, learn, and construct meaning. The challenge facing educators is not whether to use technology in cultural education, but how to use it with sufficient intentionality, cultural sensitivity, and pedagogical sophistication to foster genuine cultural appreciation in Indonesia's next generation.

CONCLUSION

This systematic review establishes that futuristic pedagogy offers significant potential for cultivating love for local culture among Generation Alpha elementary students through the strategic integration of technology, cultural content, and developmentally appropriate instructional approaches. The synthesis of 47 scholarly sources reveals three critical findings: futuristic pedagogy encompasses six interconnected elements that balance technological competencies with character development; Generation Alpha exhibits seven distinctive characteristics including a productive global-local cultural tension; and technology-enhanced strategies, particularly augmented reality applications, can effectively bridge digital engagement with cultural authenticity. This research contributes to educational theory by reconceptualizing cultural character education as an active, digitally mediated process requiring integration of technological, cultural, and developmental dimensions within unified pedagogical frameworks. The findings challenge binary oppositions between technology and culture, positioning their integration as essential for meaningful cultural education in the digital age. Practically, educational institutions must invest in developing teachers' culturally responsive technological pedagogical knowledge, prioritize AR technology adoption for cultural education, and emphasize student-generated cultural documentation leveraging digital tools. However, several limitations constrain these findings, including the review methodology's inability to establish causality, geographic concentration of existing research in developed contexts, and limited evidence of long-term effectiveness in developing sustained cultural appreciation. Future research should conduct longitudinal experimental studies establishing causal relationships, investigate adaptations for diverse Indonesian cultural contexts and resource-constrained settings, and examine potential unintended consequences of technology-mediated cultural education. Ultimately, realizing futuristic pedagogy's potential requires moving beyond technological adoption toward fundamental reconceptualization of

cultural education that engages Generation Alpha students as cultural co-creators while navigating the productive tensions between global exposure and local grounding, technological engagement and cultural authenticity, and innovation and preservation.

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