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Management of Digital Media Use in Integrating Local Wisdom in Elementary Schools

Asti Susanti*
Universitas Islam Nusantara, Bandung, Indonesia

Ade Tutty Rokhayati Rosa
Universitas Islam Nusantara, Bandung, Indonesia

***Corresponding Author:** astisusanti@uninus.ac.id

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Abstract
The rapid integration of digital media in elementary education presents a paradox: while enhancing pedagogical delivery, it risks eroding local wisdom without systematic cultural intentionality. This study examines digital media management for local wisdom integration through the Plan-Do-Check-Act (PDCA) framework. Employing qualitative descriptive design, this research investigated practices at two purposively selected elementary schools in West Java, Indonesia. Data were collected through classroom observations (24 sessions), semi-structured interviews with principals and teachers (n=8), student interviews (n=12), and document analysis, then analyzed using Miles-Huberman procedures with source triangulation for trustworthiness. Findings reveal that while both schools successfully implement digital media with high student engagement (88%), local wisdom integration remains severely limited (8% of observed lessons). Analysis across PDCA phases demonstrates systematic gaps: planning lacks cultural grounding, implementation prioritizes generic content, evaluation focuses exclusively on academic outcomes while neglecting cultural dimensions, and follow-up emphasizes technical rather than culturally-responsive pedagogical development. Teachers demonstrate reasonable technical proficiency but lack conceptual frameworks for bridging technology and culture. Results indicate incomplete PDCA implementation characterized by "technology-first" rather than "purpose-first" planning, creating digital cultural displacement. The study contributes theoretically by introducing "cultural intentionality" as essential for effective digital media management and practically by demonstrating that infrastructure investment without culturally-informed pedagogical capacity building risks accelerating cultural homogenization. Future research should pursue longitudinal investigations and participatory approaches engaging communities in co-designing culturally-responsive digital resources.

INTRODUCTION

The rapid development of digital technology over the past decade has fundamentally transformed educational practices worldwide. This transformation has been particularly accelerated since 2020, when the COVID-19 pandemic necessitated an abrupt shift from conventional to digital-based learning modalities (Iivari, Sharma, & Ventä-Olkkonen, 2020; Pozo, Cabellos, & Pérez Echeverría, 2024; Zhou, Smith, & Al-Samarraie, 2024). This transition has fundamentally altered how teachers and students interact with educational content, with digital devices, learning applications, interactive videos, and collaborative platforms becoming essential rather than supplementary tools in the teaching-learning process (Bogdandy, Tamas, & Toth, 2020; Matsieli & Mutula, 2024; Zancajo et al., 2022). At the elementary school level, this shift represents not merely a technological upgrade but a paradigmatic change in pedagogical approaches that demands careful examination and strategic management (Kim et al., 2024).

However, the integration of digital technology in education presents a critical paradox. While digital media offers unprecedented opportunities for enhanced learning experiences through

interactive, engaging, and personalized content delivery, its implementation without careful consideration of cultural contexts risks undermining one of education's fundamental missions: the preservation and transmission of cultural heritage and national identity (Mendoza et al., 2023). This tension is particularly acute in developing countries where the forces of globalization and digital connectivity expose young learners to predominantly Western cultural content, potentially eroding their connection to indigenous knowledge systems and local cultural values (Appadurai, 1996). Elementary school students, who are in their formative years of identity development, are especially vulnerable to this cultural displacement, often demonstrating greater familiarity with foreign cartoon characters and global popular culture than with their own traditional narratives, artistic expressions, and community practices (Muñoz-Rodríguez et al., 2022; Mabovula, 2011).

Empirical observations at SDN Cicalengka 06 in Bandung Regency and SDN 01 Limbangan Barat in Garut Regency reveal the manifestation of this challenge in Indonesian elementary schools. Despite the availability of digital devices and basic infrastructure, their utilization remains superficial and culturally disconnected. Teachers predominantly employ digital media to present generic educational videos sourced from the internet, with minimal or no integration of local wisdom content. The materials presented often lack contextual relevance to students' daily lives and cultural environments, resulting in learning experiences that are technologically enhanced yet culturally impoverished (Ardan, 2016; Uge, Neolaka, & Yasin, 2019). This disconnect is further exacerbated by teachers' limited competencies in developing culturally responsive digital content and persistent infrastructure constraints, including inadequate internet connectivity and insufficient technical support systems (Lubis, 2023; Takeuchi & Vaala, 2014).

The scholarly literature reveals a significant gap in understanding how digital media can be systematically managed to serve dual educational objectives: leveraging technological affordances for pedagogical enhancement while simultaneously preserving and promoting local cultural wisdom. While existing research has examined digital media utilization in education (Al-Samarraie et al., 2023; Händel et al., 2020) and cultural preservation initiatives separately (Shiri et al., 2022; Naidoo & Vithal, 2014), few studies have addressed the managerial dimensions of integrating these two critical aspects within a unified framework. Previous investigations have documented the potential of digital technology to increase student engagement (Smeda et al., 2014) and the importance of multicultural education grounded in local wisdom (Battiste, 2002; Dei, 2000; Semali & Kincheloe, 1999), yet the practical mechanisms for achieving this integration through systematic management processes remain underexplored. This gap is particularly pronounced in elementary education contexts, where foundational identity formation occurs and where the need for culturally responsive pedagogy is most critical (Gunjebo, Woldemariam, & Boru, 2025; Ronoh, 2018).

The theoretical framework of Plan-Do-Check-Act (PDCA), originally developed by Walter Shewhart and popularized by W. Edwards Deming for quality management in industrial contexts, offers a promising approach for addressing this integration challenge (Deming, 1993; Shewhart, 1939). The PDCA cycle emphasizes continuous improvement through systematic planning, implementation, evaluation, and corrective action (Moen & Norman, 2010; Sokovic, Pavletic, & Pipan, 2010). Applied to educational settings, this framework provides a structured methodology for ensuring that digital media utilization is purposeful, sustainable, and continuously refined to meet evolving pedagogical and cultural objectives (Jones, Parast, & Adams, 2010). However, the application of PDCA specifically to the management of digital media for local wisdom integration in elementary schools remains an underinvestigated area requiring empirical examination (Sangpikul, 2020; Stohr-Hunt, 1996).

This study addresses the identified knowledge gap by investigating the management of digital media utilization in integrating local wisdom into elementary school learning through the lens of the PDCA framework. The research examines four critical managerial aspects: planning, implementation, evaluation, and follow-up actions. By conducting in-depth qualitative investigation at SDN Cicalengka 06 and SDN 01 Limbangan Barat, this study seeks to provide empirical evidence of current practices,

identify systemic challenges, and generate actionable recommendations for improving the management of culturally responsive digital learning environments.

The significance of this research is multifaceted. Theoretically, it contributes to the emerging discourse on technology-mediated cultural education by demonstrating how management frameworks can bridge the gap between technological innovation and cultural preservation (Morris et al., 2021; Marin & Bang, 2015; Rudell et al., 2016). It extends the application of PDCA methodology beyond traditional quality management contexts to address complex sociocultural educational challenges (Vial, 2019). Practically, the findings offer valuable insights for teachers, school administrators, and education policymakers seeking to design and implement digital learning strategies that are simultaneously technologically sophisticated and culturally grounded (Govender & Mudzamiri, 2022; Shizha, 2006; Smith, 2002). The study's recommendations aim to support the development of a generation of students who are digitally literate, academically proficient, and deeply rooted in their cultural heritage—essential competencies for thriving in an increasingly globalized yet culturally diverse world (Gay, 2018; Gruenewald, 2003; Moll et al., 1992). Ultimately, this research contributes to broader efforts to reimagine elementary education as a space where technological advancement and cultural preservation are not competing priorities but complementary dimensions of holistic student development (Jegede & Okebukola, 1991; Triyanto & Handayani, 2020).

METHODS

This study employed a qualitative descriptive research design, which is particularly suited for investigating complex educational phenomena in their natural contexts and capturing the lived experiences of participants without imposing predetermined theoretical frameworks (Colorafi & Evans, 2016; Neergaard et al., 2009). The descriptive qualitative approach enabled the researchers to provide a comprehensive and detailed portrayal of how digital media is managed for local wisdom integration in elementary school settings, with emphasis on understanding current practices, challenges, and opportunities from multiple stakeholder perspectives (Bradshaw et al., 2017; Kim et al., 2017). This methodological choice aligns with the study's objective to explore and describe managerial processes rather than to test hypotheses or develop new theory.

The research was conducted at two purposively selected elementary schools in West Java Province, Indonesia: SDN Cicalengka 06 located in Bandung Regency and SDN 01 Limbangan Barat situated in Garut Regency. These research sites were deliberately chosen based on criterion sampling strategy, a purposive sampling technique appropriate for quality assurance purposes (Ahmad & Wilkins, 2025; Patton, 2015). The selection criteria included: (1) schools that had implemented digital media in their teaching-learning processes for at least two academic years, (2) availability of basic digital infrastructure, (3) willingness of school leadership to participate in the research, and (4) accessibility for intensive fieldwork. The purposive selection of these two schools allowed for information-rich cases that could provide in-depth insights into the phenomenon under investigation (Campbell et al., 2020; Palinkas et al., 2015). The research participants consisted of purposively selected key informants who possessed substantial knowledge and direct experience with digital media implementation and local wisdom integration, including two school principals (one from each school), six classroom teachers (three from each school) responsible for implementing digital-based learning, and twelve students (six from each school) selected to represent diverse achievement levels and engagement patterns. This multi-level participant selection strategy ensured representation of different perspectives within the school ecosystem and enhanced the comprehensiveness of data collection (Morse, 2015; Nyimbili & Nyimbili, 2024).

Data collection employed three complementary methods to achieve methodological triangulation, thereby enhancing the validity and credibility of findings (Carter et al., 2014; Denzin, 1978; Patton, 1999). First, non-participant observation was conducted during regular classroom sessions where teachers utilized digital media in their instruction, with specific attention directed toward planning processes, implementation strategies, student engagement patterns, and the

presence or absence of local wisdom content. The researchers employed structured observation protocols to systematically document classroom activities, teacher-student interactions, and digital media utilization patterns, with each observation session lasting approximately 90-120 minutes and recorded through detailed field notes and photographic documentation where permitted (Creswell & Poth, 2018). Second, semi-structured in-depth interviews were conducted with school principals and teachers to explore their perspectives, experiences, challenges, and strategies related to digital media management and local wisdom integration. The interview protocol was developed based on the PDCA framework, covering planning, implementation, evaluation, and follow-up actions, with interviews lasting 45-75 minutes each and audio-recorded with participants' informed consent for subsequent verbatim transcription (Kallio et al., 2016; Oltmann, 2016). Third, document analysis was performed on relevant materials including lesson plans, digital media content utilized in instruction, school policies regarding technology integration, evaluation reports, and artifacts of student work to provide contextual understanding and corroborate findings from observations and interviews (Bowen, 2009; Prior, 2003). This triangulation of multiple data sources strengthened the trustworthiness of findings by enabling cross-verification and providing a more complete and nuanced understanding of the phenomenon (Morgan, 2024; Shenton, 2004).

The data analysis followed the systematic procedures outlined by Miles, Huberman, and Saldaña (2014), which emphasize iterative engagement with data through three concurrent flows of activity: data condensation, data display, and conclusion drawing and verification. Data condensation involved the systematic process of selecting, focusing, simplifying, abstracting, and transforming the raw data collected from field notes, interview transcripts, and documents. The researchers employed both descriptive and pattern coding techniques to organize the extensive qualitative data, with initial codes generated inductively from the data itself while remaining attuned to the theoretical framework of the PDCA cycle that guided the research (Saldaña, 2021). Data display encompassed the creation of organized, compressed assemblies of information presented in matrices, graphs, networks, and charts that permitted systematic examination of patterns and relationships. These visual displays facilitated the identification of themes and patterns across different data sources and enabled the researchers to move beyond scattered information toward integrated understanding (Miles et al., 2020). The final analytic component involved drawing and verifying conclusions through a recursive process of noting regularities, patterns, explanations, possible configurations, causal flows, and propositions, which were then systematically verified through strategies including checking for researcher effects, triangulating across different data sources and methods, and seeking feedback from participants regarding the plausibility of emerging findings (Huberman & Miles, 1994; Saldaña, 2011).

To ensure the trustworthiness and rigor of this qualitative inquiry, multiple validation strategies were implemented throughout the research process (Lincoln & Guba, 1985; Noble & Smith, 2015). Credibility was enhanced through prolonged engagement in the field (approximately four months at each site), persistent observation of multiple classroom sessions, and source triangulation that integrated data from observations, interviews, and documents (Amankwaa, 2016; Korstjens & Moser, 2018). Dependability was established through maintaining a detailed audit trail documenting all research decisions, procedures, and analytic processes, which external reviewers could examine to assess the consistency and reliability of the research process (Cope, 2014; Nowell et al., 2017). Confirmability was addressed through reflexive journaling in which researchers documented their own assumptions, reactions, and potential biases, thereby enabling readers to assess the extent to which findings emerged from the data rather than researcher predispositions (Berger, 2015; Houghton et al., 2013). Finally, transferability was facilitated through providing thick description of the research context, participants, and processes, enabling readers to assess the applicability of findings to their own contexts (Graneheim & Lundman, 2004; Polit & Beck, 2010). The research received ethical clearance from the institutional review board, and all participants provided informed consent after

receiving comprehensive information about the study's purposes, procedures, potential risks, and their rights to withdraw at any time without consequences.

RESULTS AND DISCUSSION

Results

The findings of this study reveal both promising developments and significant challenges in the management of digital media utilization for local wisdom integration at SDN Cicalengka 06 and SDN 01 Limbangan Barat. The results are organized according to the four PDCA framework components—planning, implementation, evaluation, and follow-up actions—that guided this investigation. This organizational structure enables a systematic examination of how these elementary schools currently manage digital media integration while highlighting areas requiring improvement.

Planning Phase: Intentions Without Cultural Grounding

Analysis of lesson plans and interviews with teachers revealed that both schools have initiated efforts to incorporate digital media into their instructional planning. All six participating teachers reported developing lesson plans that specified the use of digital tools such as educational videos, interactive presentations, and web-based learning applications. Table 1 presents the digital media types planned and their intended pedagogical purposes as documented in teachers' lesson plans collected over one academic semester.

Table 1. Digital Media Types in Teacher Lesson Plans

Digital Media Type	Frequency of Use	Primary Pedagogical Purpose	Local Wisdom Integration
YouTube educational videos	Very High (85%)	Content explanation and visualization	Minimal (5%)
PowerPoint presentations	High (70%)	Concept introduction and summary	Absent (0%)
Learning management apps	Moderate (45%)	Assignment distribution and collection	Absent (0%)
Interactive quizzes (Kahoot, Quizizz)	Moderate (40%)	Formative assessment	Absent (0%)
Educational games	Low (20%)	Engagement and reinforcement	Minimal (10%)

Note: Percentages indicate proportion of teachers regularly incorporating each media type. Local wisdom integration percentage reflects content explicitly featuring local cultural elements.

The data in Table 1 demonstrate a concerning pattern: while teachers demonstrate awareness of diverse digital media tools and their pedagogical applications, the integration of local wisdom content remains severely limited or entirely absent. During interviews, teachers acknowledged this gap explicitly. One teacher from SDN Cicalengka 06 stated, "We use digital media frequently, but honestly, we mostly search for ready-made content from YouTube or educational platforms. Creating our own content based on local culture requires skills and time that we currently don't have" (Teacher Interview, March 2024). This sentiment was echoed by colleagues at both schools, revealing a systemic challenge in planning phase.

Further investigation into planning documents revealed that while teachers demonstrated familiarity with curriculum standards and learning objectives, they lacked structured frameworks for identifying relevant local wisdom elements that could be integrated with subject matter. When asked about their planning process, teachers indicated they followed a predominantly reactive approach—selecting available digital resources that matched content topics—rather than a proactive strategy of designing culturally responsive digital learning experiences. This finding aligns with observations by one school principal who noted, "Teachers are enthusiastic about using technology, but they need guidance on how to connect it meaningfully with our local culture. We haven't provided them with clear frameworks or examples to follow" (Principal Interview, March 2024).

Implementation Phase: Enthusiasm Meets Cultural Disconnect

Classroom observations conducted across 24 teaching sessions (12 at each school) revealed that teachers successfully integrated digital media into their instruction, creating visibly more engaging learning environments compared to traditional lecture-based approaches. Students consistently demonstrated high levels of attention, participation, and enthusiasm during digital media-enhanced lessons. However, detailed field notes revealed a significant disconnect between the technological sophistication of delivery and the cultural relevance of content.

Representative observation data from one Grade 4 science lesson at SDN 01 Limbangan Barat illustrates this pattern. The teacher utilized an animated video about photosynthesis featuring high-quality graphics and clear narration. Students watched attentively, participated actively in follow-up discussions, and demonstrated good comprehension of the scientific concept. However, the video featured generic plant examples (including species not native to West Java), Western animation styles, and no references to local agricultural practices or traditional ecological knowledge that farmers in Garut Regency have employed for generations. When asked afterward whether students recognized local plants or traditional farming wisdom related to the lesson, the teacher acknowledged, "I hadn't thought about making those connections. The video explained photosynthesis well scientifically, which was my main objective" (Teacher Interview, March 2024).

Across all observed lessons, a consistent pattern emerged: digital media enhanced pedagogical delivery and student engagement but failed to serve as a bridge connecting students with their cultural heritage. Table 2 summarizes key implementation characteristics observed during classroom sessions.

Table 2. Digital Media Implementation Characteristics (N=24 Observations)

Implementation Aspect	Observed Frequency	Quality Rating*	Cultural Integration Level
Technical execution (media functions properly)	92%	High	N/A
Student attention and engagement	88%	High	N/A
Clear learning objectives	83%	High	N/A
Interactive elements utilized	67%	Moderate	N/A
Content relevance to daily student life	42%	Moderate	Low
Explicit local wisdom integration	8%	Low	Very Low
Teacher facilitation connecting content to local culture	12%	Low	Very Low

*Quality rating based on observer assessment using structured rubric (Low/Moderate/High)

An unexpected finding emerged regarding student awareness of their own cultural heritage. When researchers engaged students in informal conversations after lessons, many demonstrated limited knowledge about local traditions, folktales, traditional games, or cultural practices specific to their regions. For instance, when asked about traditional Sundanese stories or local heroes, only 3 out of 12 interviewed students could name specific examples, yet all could readily discuss popular anime characters or viral internet personalities. One student remarked, "I know more about Pokemon than about wayang golek [traditional Sundanese puppetry], because I see it more on my phone and computer" (Student Interview, April 2024). This finding underscores the urgency of integrating local wisdom into the digital learning environments that so powerfully capture students' attention and shape their cultural awareness.

Evaluation Phase: Academic Focus Eclipses Cultural Assessment

Teachers at both schools conducted regular assessments of student learning, primarily through written tests, oral questions, and observation of student work. However, analysis of assessment instruments and discussions with teachers revealed that evaluation practices focused almost exclusively on academic achievement measured through curriculum standards, with virtually no systematic assessment of students' understanding, appreciation, or internalization of local cultural values.

Review of 48 assessment instruments (quizzes, tests, and rubrics) used across both schools during the research period found that none explicitly evaluated students' knowledge of local wisdom, cultural awareness, or ability to connect academic content with local cultural contexts. When this finding was raised during focus group discussions, teachers explained that their evaluation practices were driven primarily by standardized curriculum requirements and district-level assessment frameworks that emphasize measurable academic outcomes. One teacher articulated the prevailing perspective: "We're evaluated based on student test scores and whether they meet the competency standards. Cultural appreciation is important, but it's not what gets measured in official assessments" (Teacher Focus Group, April 2024).

This evaluation gap creates a self-perpetuating cycle: because local wisdom integration is not systematically assessed, it receives minimal attention in planning and implementation phases. Teachers lack concrete data about students' cultural awareness or the effectiveness of any local culture-related instructional efforts, making it difficult to justify investing additional time and resources into developing culturally responsive digital content.

Follow-up Phase: Technical Support Without Cultural Direction

Both schools demonstrated commitment to improving digital media utilization through various follow-up initiatives, including technical infrastructure enhancement and teacher professional development. During the research period, SDN Cicalengka 06 upgraded its internet connectivity and acquired additional tablets for student use, while SDN 01 Limbangan Barat conducted two in-service training sessions on using learning management systems and creating basic PowerPoint presentations.

However, these follow-up efforts remained focused predominantly on technical competencies rather than culturally responsive pedagogy. None of the professional development activities specifically addressed local wisdom integration, culturally relevant digital content development, or strategies for connecting technology with cultural preservation. School principals acknowledged awareness of this limitation. The principal of SDN 01 Limbangan Barat explained, "We prioritize training that addresses teachers' immediate technical skill gaps. We know cultural integration is important, but we lack expertise ourselves in how to train teachers on this aspect. It's easier to bring in technology trainers than cultural education specialists" (Principal Interview, May 2024).

Analysis of follow-up documentation revealed that while both schools established mechanisms for addressing technical problems (e.g., equipment maintenance, software troubleshooting), no comparable systems existed for continuously improving the cultural relevance of digital learning content. This asymmetry in follow-up attention reflects broader systemic challenges in conceptualizing digital media management as encompassing both technological and cultural dimensions.

Discussion

Principal Findings and Their Significance

This study reveals a fundamental paradox in current digital media management practices at the two participating elementary schools: while technology has successfully penetrated pedagogical practices and demonstrably enhances student engagement, it operates in a cultural vacuum that potentially accelerates rather than mitigates the erosion of local wisdom among young learners. The findings confirm the study's central proposition that without systematic management guided by frameworks like PDCA, digital media risks becoming merely another conduit for culturally homogenized, predominantly Western content that displaces rather than preserves indigenous knowledge systems.

The research addresses its primary objective of examining how digital media utilization is managed for local wisdom integration by demonstrating that current management practices, while incorporating elements of planning, implementation, evaluation, and follow-up, fundamentally lack cultural intentionality at every stage. This finding extends beyond simple oversight or resource

limitations; it reflects deeper systemic issues regarding how educators conceptualize their professional responsibilities in an era of rapid technological change and cultural globalization.

Theoretical Interpretation: Incomplete PDCA Implementation

Analyzing findings through the PDCA framework lens reveals that while both schools engage in cyclical improvement processes, their cycles operate primarily within a technological-pedagogical domain while excluding the cultural dimension. In Deming's original quality management conceptualization, PDCA emphasizes not merely executing steps but ensuring that planning aligns with organizational values and mission (Moen & Norman, 2010). Applied to education, this principle suggests that digital media management should reflect schools' commitment to both academic excellence and cultural preservation—a dual mission explicitly stated in Indonesia's national education philosophy but inadequately operationalized in observed practices.

The planning phase findings demonstrate what can be characterized as "technology-first" rather than "purpose-first" planning. Teachers select digital tools based on availability and technical functionality rather than on their capacity to serve culturally responsive pedagogical objectives. This approach contrasts sharply with culturally sustaining pedagogy frameworks (Paris & Alim, 2017) that advocate for grounding instructional design in students' cultural identities and community knowledge. The observed pattern suggests that teachers lack not only technical skills for creating culturally relevant digital content but also, more fundamentally, pedagogical frameworks for conceptualizing how local wisdom and modern subject matter can be meaningfully integrated.

Implementation phase findings reveal the powerful but double-edged nature of digital media's engagement potential. The observed high student enthusiasm for digital learning environments aligns with extensive research documenting technology's motivational benefits (Smeda et al., 2014). However, this engagement becomes problematic when directed toward culturally disconnected content, potentially creating what might be termed "digital cultural displacement"—where compelling technological delivery mechanisms inadvertently strengthen students' connections to global popular culture while weakening ties to local heritage. This phenomenon echoes concerns raised by scholars examining globalization's impact on indigenous knowledge systems (Ahenakew, 2016; Marin & Bang, 2015), suggesting that technology without cultural grounding may amplify rather than mitigate cultural homogenization pressures.

The evaluation phase gap—absence of systematic cultural assessment—represents perhaps the most critical finding from a management perspective. In PDCA cycles, the "Check" phase generates essential data for determining whether actions achieve intended outcomes and where improvements are needed (Sokovic et al., 2010). Without culturally focused evaluation mechanisms, schools lack fundamental information about students' cultural awareness trajectories, making evidence-based improvement impossible. This gap reflects broader challenges in educational assessment systems that privilege easily quantifiable academic outcomes over complex cultural learning objectives (Au, 2007; Taubman, 2009).

Critical Engagement with Existing Literature

The findings both confirm and extend existing scholarship on digital media integration and indigenous knowledge preservation in elementary education. Consistent with recent studies on teacher digital competencies (Falloon, 2020; Lucas et al., 2021; OECD, 2023), this research documents significant gaps in teachers' capacity to develop culturally responsive digital content. However, the current study advances understanding by demonstrating that these competency gaps cannot be adequately addressed through conventional technical training alone. Teachers at both research sites had received digital skills training and demonstrated reasonable technical proficiency, yet remained unable to bridge technology and culture. This finding suggests that the problem is not simply insufficient training hours but inadequate conceptual frameworks guiding professional development priorities.

The cultural disconnect observed in implementation practices resonates with Jegede and Okebukola's (1991) longstanding observation of conflicts between Western science pedagogy and indigenous knowledge systems, but manifests in contemporary forms. Where earlier research documented tensions in how scientific concepts were presented (Gwekwerere, 2016; Shizha, 2006), the current findings reveal how digital media's format, aesthetics, and content sources systematically privilege global over local cultural expressions. This represents a qualitative shift in how cultural marginalization occurs—not through explicit devaluation of indigenous knowledge but through its practical absence from the compelling digital environments that increasingly mediate children's learning experiences.

Interestingly, the findings both support and complicate research documenting digital media's potential for cultural preservation. While studies by Morris et al. (2021), Naidoo & Vithal (2014), and Rudell et al. (2016) demonstrate successful models of integrating indigenous knowledge through digital tools, the current research reveals that such integration does not occur organically simply because technology is available. The contrast between documented possibilities and observed realities underscores that effective integration requires deliberate management systems—precisely what PDCA frameworks can provide when properly culturally informed. This gap between potential and practice suggests important limitations in how digital integration research findings translate to typical school contexts where specialized expertise or dedicated resources for culturally responsive technology development may be absent.

The evaluation gap identified in this study highlights issues insufficiently addressed in existing literature on educational technology assessment. While substantial research examines how to assess students' digital literacy or technology-enhanced academic learning (Siddiq et al., 2016; van Laar et al., 2017), far less attention has been directed toward developing assessment frameworks that simultaneously evaluate academic achievement, digital competency, and cultural awareness. The current findings suggest that this represents a critical knowledge gap requiring urgent scholarly attention, particularly as education systems worldwide grapple with balancing technological modernization and cultural preservation imperatives.

Divergence from Previous Research and Novel Insights

This study diverges from much existing research by demonstrating that high student engagement with digital media does not necessarily indicate successful learning integration. While engagement is frequently cited as evidence of effective technology use (Fredricks et al., 2004; Henrie et al., 2015), the current findings reveal that engagement can be pedagogically productive yet culturally counterproductive—students enthusiastically consume content that systematically distances them from their heritage. This complicates simplistic narratives about digital media's educational benefits and highlights the need for more nuanced evaluation frameworks that consider cultural as well as cognitive dimensions of learning.

The unexpected finding regarding students' limited awareness of local cultural heritage, despite living in culturally rich regions, provides empirical evidence of cultural displacement concerns that have been theoretically articulated but insufficiently documented in elementary education contexts. The contrast between students' detailed knowledge of global popular culture and superficial familiarity with local traditions offers a stark illustration of the urgent need for culturally responsive digital pedagogy. This finding challenges deficit-oriented interpretations that might attribute cultural disconnection to students' or families' lack of interest; instead, it reveals how school-mediated digital environments systematically fail to position local culture as relevant, engaging, or worthy of sustained attention.

The identification of "cultural intentionality" as absent from management practices represents a conceptual contribution to understanding technology integration challenges. Existing frameworks like TPACK (Mishra & Koehler, 2006) emphasize technological, pedagogical, and content knowledge but do not explicitly foreground cultural responsiveness as a distinct competency domain requiring systematic attention. The current study's findings suggest that effective digital media management in diverse

cultural contexts may require expanding TPACK to include explicit cultural knowledge and pedagogical capacity to bridge technology and local wisdom—what might be termed CTPACK (Cultural-Technological-Pedagogical-And-Content-Knowledge).

Theoretical and Practical Implications

Theoretically, this research contributes to emerging discourse on culturally sustaining pedagogies (Paris & Alim, 2017) by demonstrating how management frameworks like PDCA can provide structured approaches for operationalizing cultural responsiveness in technology-mediated learning environments. The study extends quality management theory into culturally complex educational contexts, showing that continuous improvement cycles must encompass cultural preservation alongside academic and technical objectives. This extension has implications for how educational leaders conceptualize school improvement processes in multicultural societies experiencing rapid technological change.

The findings also have significant implications for understanding the relationship between globalization, technology, and cultural identity formation among children. The research provides empirical support for concerns that uncritical technology adoption in schools may inadvertently accelerate cultural homogenization (Appadurai, 1996; Spring, 2015). However, by documenting specific mechanisms through which this occurs—unexamined content selection, absence of cultural evaluation criteria, technically focused professional development—the study moves beyond generalized critique to identify concrete intervention points where culturally responsive management practices could redirect technology toward more culturally sustaining outcomes.

Practically, the research offers several actionable insights for elementary schools, teacher educators, and education policymakers. First, findings underscore the insufficiency of technology infrastructure investment without corresponding investment in culturally informed pedagogical capacity building. Schools acquiring devices and connectivity without developing teachers' capabilities to create or curate culturally relevant digital content risk merely providing more powerful tools for delivering culturally homogenized curricula. Second, the study demonstrates the necessity of redesigning teacher professional development to integrate cultural responsiveness and technological competency development rather than treating these as separate domains. Third, the evaluation gap finding suggests that schools must develop assessment frameworks explicitly measuring students' cultural awareness and appreciation, thereby creating accountability systems that incentivize culturally responsive practice.

For policymakers, the research highlights the need for curriculum guidance materials and digital content repositories specifically designed to support local wisdom integration. Individual teachers cannot reasonably be expected to shoulder sole responsibility for developing culturally authentic digital materials while managing all other instructional demands. Systemic support structures—including collaborations with cultural experts, community elders, and local artists to co-create appropriate digital resources—appear essential for enabling widespread culturally responsive technology integration.

Limitations and Research Boundaries

Several limitations warrant acknowledgment. First, the study's focus on two schools in West Java, while enabling in-depth investigation, limits generalizability to other Indonesian regions or international contexts with different cultural and technological landscapes. The specific challenges and opportunities for local wisdom integration may vary significantly across different cultural communities and their particular knowledge systems. Second, the four-month data collection period, while sufficient for identifying patterns in planning-implementation-evaluation-follow-up cycles, could not capture longer-term trends or seasonal variations in digital media utilization. Third, the study relied primarily on teacher and administrator perspectives with more limited direct student voice, particularly regarding students' own desires and ideas for how their cultural heritage might be incorporated into

digital learning experiences. Future research should more centrally engage students as co-designers of culturally responsive digital learning environments.

Fourth, the research did not include systematic comparison with schools successfully integrating local wisdom into digital media, limiting insights into effective practices that might inform recommendations. While literature documents exemplary programs, direct comparative observation could yield richer understanding of factors differentiating successful from struggling implementations. Finally, the study examined management practices without investigating community and family perspectives on school-based cultural education. Given that cultural transmission has traditionally occurred primarily through family and community networks, understanding stakeholder expectations and desired roles in digital-age cultural education represents an important avenue for future inquiry.

Future Research Directions

The identified limitations suggest several productive directions for future research. Longitudinal studies tracking schools as they implement culturally informed PDCA cycles could document implementation challenges, refinement processes, and outcomes over multiple improvement cycles. Comparative research examining schools with varying levels of local wisdom integration success could identify critical success factors and transferable best practices. International comparative studies could explore how different cultural contexts and education systems approach the challenge of balancing technological modernization with cultural preservation.

Participatory action research engaging teachers, students, community cultural knowledge holders, and researchers in collaborative development of culturally responsive digital learning resources could generate both practical solutions and theoretical insights into co-design processes. Research investigating the role of emerging technologies—including artificial intelligence tools that might facilitate culturally responsive content creation, virtual reality applications for immersive cultural experiences, or social media platforms for intergenerational cultural knowledge sharing—could reveal new possibilities for technology-mediated cultural education.

Finally, research developing and validating assessment frameworks for holistically evaluating academic learning, digital competency, and cultural awareness simultaneously would address the evaluation gap identified in this study and provide essential tools for schools seeking to implement culturally responsive digital pedagogy.

Synthesis: Toward Culturally Informed Digital Education Management

This study demonstrates that elementary schools in West Java have begun the journey toward digital transformation but remain at an early stage regarding culturally responsive technology integration. Current management practices, while incorporating basic PDCA elements, lack the cultural intentionality necessary to harness digital media's potential as a bridge between modern education and local wisdom preservation. The research reveals that this gap stems not primarily from resource constraints or teacher resistance but from systemic factors including inadequate conceptual frameworks for culturally responsive technology pedagogy, assessment systems that overlook cultural dimensions of learning, and professional development that treats technical and cultural competencies as separate domains.

The findings suggest that elementary education stands at a critical juncture. Decisions made now about how to manage digital media integration will shape an entire generation's relationship with their cultural heritage. If current patterns continue—technological sophistication increasing while cultural intentionality remains absent—schools risk inadvertently positioning themselves as sites of cultural displacement rather than preservation. However, if education systems embrace culturally informed digital media management frameworks, systematically developing teachers' capacity to bridge technology and culture, schools could become powerful sites for cultural revitalization that equip students with both 21st-century competencies and deep roots in their cultural communities.

Realizing this potential requires reconceptualizing educational technology not as culturally neutral tools but as cultural artifacts carrying particular worldviews, values, and knowledge systems. It

demands recognizing that managing digital media in elementary education is fundamentally a cultural as well as technical undertaking. Most importantly, it necessitates building management systems—reflected in planning protocols, implementation strategies, evaluation frameworks, and continuous improvement processes—that position local wisdom not as an afterthought or optional supplement but as a central element of what it means to provide quality, meaningful education in the digital age.

CONCLUSION

This study reveals a critical paradox in elementary school digital media management: while technology successfully enhances pedagogical delivery and student engagement, it operates within a cultural vacuum that risks accelerating rather than mitigating local wisdom erosion. Examining practices at two West Java elementary schools through the PDCA framework demonstrates that current management approaches, though incorporating planning, implementation, evaluation, and follow-up elements, fundamentally lack cultural intentionality. Teachers demonstrate reasonable technical proficiency yet remain unable to bridge digital media with local wisdom due to inadequate conceptual frameworks, culturally-blind assessment systems, and professional development that treats technological and cultural competencies as separate domains.

The research contributes theoretically by demonstrating how quality management frameworks can operationalize culturally responsive pedagogy in technology-mediated learning environments, proposing the concept of "cultural intentionality" as essential to effective digital media management in diverse contexts. It extends PDCA application beyond traditional quality management into culturally complex educational settings. Practically, findings underscore that infrastructure investment without corresponding culturally-informed pedagogical capacity building risks providing more powerful tools for delivering culturally homogenized curricula, necessitating integrated professional development and culturally-focused assessment frameworks.

Study limitations include geographical scope, four-month timeframe, limited student voice, and absence of comparative successful implementations. Future research should pursue longitudinal investigations tracking culturally-informed PDCA implementation, comparative studies identifying success factors, and participatory action research engaging communities in co-designing culturally responsive digital resources.

Ultimately, this research demonstrates that elementary education faces a critical juncture: decisions about digital media management will fundamentally shape students' cultural identity formation. Realizing technology's potential for cultural preservation requires reconceptualizing educational technology as cultural rather than neutral tools, demanding management systems positioning local wisdom centrally within quality digital education rather than as optional supplements.

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