

ENHANCING UNDERSTANDING OF LOCAL WISDOM AND SOCIAL ISSUES THROUGH AI AND EDUCATIONAL APPLICATIONS

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Abstract

Local wisdom-based learning plays a significant role in strengthening students' cultural identity, social awareness, and critical understanding of contemporary societal issues. In the digital era, the integration of artificial intelligence (AI) and educational applications offers innovative opportunities to create interactive, contextual, and student-centered learning environments. This study aims to examine the contribution of AI and educational applications in enhancing students' understanding of local wisdom and social issues through a literature review approach. Data were collected from recent national and international scholarly articles discussing AI integration, digital learning media, and culturally responsive education. The findings indicate that AI-supported educational applications improve student engagement, conceptual comprehension, critical thinking, and collaborative learning experiences. Furthermore, these technologies facilitate access to contextual learning resources that connect local cultural values with real social problems encountered in everyday life. However, several challenges remain, including unequal technological access, limited teacher digital competence, and the need for culturally relevant and high-quality learning content. The study concludes that AI and educational applications have strong potential to support meaningful local wisdom-based learning and social issue education. Effective implementation requires adequate technological infrastructure, teacher professional development, and the development of adaptive and culturally responsive digital learning materials.

Keywords: artificial intelligence; educational applications; local wisdom; literature review; social issues; innovative learning

1. INTRODUCTION

In an era of globalization and rapid digital transformation, Indonesian education faces a complex dual challenge: how to preserve and revitalize local wisdom amid the strong influence of global culture, while simultaneously equipping students with a critical understanding of increasingly complex contemporary social issues. Local wisdom-based learning has been proven to play an important role in strengthening students' cultural identity, enhancing social awareness, and fostering critical understanding of societal issues. However, the reality in educational practice indicates that the implementation of local wisdom-based learning still faces several significant obstacles, including the limited availability of culturally relevant learning materials, varying levels of teachers' competence in delivering culture-based instruction, and the dominance of global popular culture, which is often more appealing to students than their own local traditions (Aprianto et al., 2025; Gazali & Ningsih, 2025; Milleer 2026).

Artificial Intelligence (AI) and educational applications have emerged as innovative solutions with the potential to address these challenges by creating interactive, contextualized, and student-centered learning

environments. Recent studies indicate that AI-based tools such as ChatGPT have significant positive effects on students' critical thinking and problem-solving abilities. The integration of AI within reflective and guided learning frameworks has been shown to enhance cognitive engagement and promote critical inquiry. However, the existing literature has largely focused on the impact of AI on general cognitive skills, with limited attention given to how AI can be utilized to strengthen students' understanding of local wisdom and social issues in an integrated manner (Aprianto et al., 2025; Gonsalves, 2026; Hassan, 2025; Melisa et al., 2025).

The novelty and unique contribution of this article lie in the absence of systematic studies that specifically examine the integration of AI and educational applications to simultaneously enhance students' understanding of local wisdom and contemporary social issues within the Indonesian educational context. Previous studies have tended to address these topics separately: some have focused on AI and critical thinking, others on local wisdom without incorporating a technological dimension, and still others on the digital divide without considering its relationship to cultural content. To date, no research has comprehensively explored how AI can serve as a bridge connecting traditional cultural values with the real-world social issues that students encounter in their everyday lives (Arroba & Acosta, 2021; Azmi, 2026; Bey et al., 2026; Hidayatullah et al., 2025; Nazara et al., 2025).

The purpose of this study is to systematically examine the contribution of AI and educational applications in enhancing students' understanding of local wisdom and social issues through a Systematic Literature Review (SLR) approach using the PRISMA protocol. The research is guided by the following questions: (1) How do AI and educational applications contribute to improving student engagement, conceptual understanding, and critical thinking in local wisdom-based learning? (2) How does AI technology facilitate connections between local cultural values and contemporary social issues within educational contexts? and (3) What challenges and barriers exist in the implementation of AI for local wisdom- and social issue-based learning in Indonesia?

This study makes a theoretical contribution by developing a conceptual framework for the integration of AI, local wisdom, and social issues, which can serve as a foundation for future empirical research. It also offers practical contributions for educators, policymakers, and developers of digital learning materials in designing inclusive, contextualized, and culturally responsive learning environments in the digital era. By synthesizing findings from 15 recent studies published between 2021 and 2026, this article provides a holistic perspective that has not previously been explored, demonstrating how AI technologies can serve as a catalyst for both the preservation of local wisdom and the development of social awareness among Indonesian students.

2. METHODS

This study employed the Systematic Literature Review (SLR) method by following the PRISMA 2020 protocol to ensure transparency, reproducibility, and methodological rigor throughout the literature review process. The SLR approach was selected because it enables the systematic identification, evaluation, and synthesis of all relevant literature to address the research questions while minimizing potential bias.

2.1 Search Protocol and Data Sources

The literature search was conducted on April 20, 2026, using the scientific databases Scopus, Web of Science, Semantic Scholar, and Google Scholar. The search query included the following keywords and combinations: "artificial intelligence" OR "AI", "educational applications" OR "digital learning", "local wisdom" OR "culturally responsive", "social issues" OR "social awareness", and "students" OR "learning." The inclusion criteria for article selection were as follows: (1) publication between 2021 and 2026 to ensure relevance to the contemporary digital era; (2) availability in English or Indonesian; (3) publication as a peer-reviewed journal article or an international conference proceeding; (4) explicit discussion of AI integration in education, with a focus on local wisdom, cultural education, or social issues; and (5) availability through open-access platforms with accessible links.

2.2 PRISMA Selection Process

The selection process followed the four stages of the PRISMA protocol: (1) Identification, in which records were identified from the selected databases (Scopus, Web of Science, Semantic Scholar, and Google Scholar); (2) Screening; (3) Eligibility; and (4) Included. Following this process, a total of 15 articles were selected and analyzed in depth for the final synthesis.

2.3 Data Analysis

Data from the 15 included articles were analyzed using thematic analysis to identify patterns, themes, and best practices. The analysis was conducted iteratively through three stages: (1) familiarization with the data through comprehensive reading of all selected studies; (2) open coding to identify key concepts and recurring ideas; and (3) grouping codes into major themes and subthemes. The validity of the findings was ensured through source triangulation, which involved comparing findings across different databases, and through independent reviews conducted by two researchers to ensure consistency in interpretation. The articles included in the synthesis comprised studies from Indonesia, Southeast Asia, and other international contexts, thereby providing a comprehensive perspective and ensuring contextual relevance (Aprianto et al., 2025; Azmi, 2026; Milleer, 2026).

2.4 Article Quality Assessment Criteria

Each article was evaluated based on the following quality criteria: (1) Clarity of Research, (2) Methodological Rigor, (3) Relevance to the Topic, (4) Accessibility, and (5) Recency (publication year between 2021 and 2026). Articles that scored below 3 out of the 5 quality criteria were excluded from the final analysis.

3. RESULTS AND DISCUSSION

3.1 AI and Educational Applications Enhance Student Engagement and Conceptual Understanding

The results of the analysis indicate that AI-supported educational applications significantly enhance student engagement, conceptual understanding, and collaborative learning experiences. A study by Aprianto et al. (2025) found that (Azmi, 2026) found that the use of AI-based ChatGPT had a significant positive effect on students' critical thinking and problem-solving abilities, with $p < 0.001$ for both variables. The study involved 207 respondents selected from 855 students in the Department of Education at Jambi University who had actively used ChatGPT for more than two months. The data were analyzed using SmartPLS 4.0.9.9. These findings are consistent with the study conducted by Gonsalves (2024), which found that (Bey et al., 2026) which demonstrated that AI can enhance students' motivation, self-confidence, and autonomy in the learning process, particularly when engaging in complex tasks such as academic writing. These findings suggest that AI not only supports cognitive development but also fosters affective and self-regulated learning outcomes, enabling students to become more active and independent learners.

Interactive digital learning media, such as digital storybooks, educational applications, and learning games, promote student engagement, vocabulary development, narrative comprehension, and critical thinking among young learners. In the context of students with intellectual disabilities, edutainment media integrating local wisdom, such as the "Five Senses Windmill," demonstrated high validity (Aiken's $V = 0.91$) and effectively enhanced conceptual understanding, with an N-Gain score of 64.5% (moderate-to-high effectiveness). This learning medium successfully incorporated visual, kinesthetic, and cultural elements through the use of sustainable bamboo materials, thereby creating a meaningful learning experience. The novelty of these findings lies in the fact that AI does not merely enhance general cognitive skills; it can also be designed to integrate local cultural values while simultaneously fostering cognitive, affective, and psychomotor development. This integrated approach highlights the potential of AI-supported educational technologies to preserve cultural heritage while promoting holistic student learning outcomes (Farchan, 2025; Nazara et al., 2025; Ningsih & Pahrudin, 2026).

Developed an edutainment medium called the "Five Senses Windmill," which integrates local wisdom through Kagaluhan values derived from Indonesian culture. The medium demonstrated high validity, with an Aiken's V score of 0.91, and effectively improved students' conceptual understanding, achieving an N-Gain score of 64.5%, which falls within the moderate-to-high effectiveness category (Azmi, 2026). Interactive tools such as digital storybooks, educational applications, and game-based learning promote student engagement, vocabulary expansion, narrative comprehension, and critical thinking among young children. These findings indicate that digital learning media are not only effective for older learners but also highly beneficial for early childhood education when designed in accordance with children's developmental needs and age-appropriate learning characteristics (Ningsih & Pahrudin, 2026). AI facilitates improvements in writing quality, productivity, and idea development. However, it also presents challenges, including ethical concerns and the potential degradation of critical thinking skills when used without appropriate guidance. These findings

underscore the importance of integrating AI within a reflective and guided pedagogical framework to ensure that its benefits are maximized while minimizing potential risks (Aprianto et al., 2025).

Table 1. The Impact of AI on Student Engagement and Conceptual Understanding

Study (Year)	Study (Year)	Study (Year)	Study (Year)	Study (Year)
Aprianto dkk. (2025) https://doi.org/10.37251/isej.v7i1.2364	ChatGPT & Critical Thinking	207 university students	AI had a significant positive effect on critical thinking and problem-solving skills.	$p < 0.001$
Azmi dkk. (2026) https://doi.org/10.26877/paudia.v14i4.2271	Edutainment & Local Wisdom	Students with intellectual disabilities	Aiken's $V = 0.91$ (validitas tinggi), N-Gain = 64.5% (moderate-to-high)	Moderate-to-high effectiveness
Nazara dkk. (2025) https://doi.org/10.26803/ijlter.25.1.16	Digital Media & Literacy	Children aged 5-6 years	Digital media enhanced literacy, vocabulary development, narrative comprehension, and critical thinking skills.	Significant improv
Gonsalves (2024) https://ejournal-science.upi.edu/wapfi/article/view/17	Generative AI & Bloom's Taxonomy	Literature review	AI enhances cognitive, affective, metacognitive domains dengan revised taxonomy	Theoretical framework
Hidayatullah dkk. (2025) https://doi.org/10.59672/ijed.v6i3.5030	AI in Academic Writing (SLR)	19 documents reviewed	AI facilitates writing quality, productivity, idea development; challenges: ethics, critical thinking	Mixed effects

Based on the five studies reviewed above, it can be concluded that AI and educational applications consistently enhance student engagement, conceptual understanding, and critical thinking skills. However, the novelty of this study lies in integrating these AI-related findings with the context of local wisdom, an approach that has not been comprehensively explored in the existing literature. This integration offers a new perspective on how AI can be utilized not only to support cognitive development but also to promote the preservation and appreciation of local cultural values within educational settings (Nazara et al., 2025) is the only study that explicitly integrates local wisdom into learning media; however, it does not utilize AI technology. Meanwhile,

(Azmi, 2026; Bey et al., 2026) focuses on AI applications without incorporating the context of local culture or local wisdom..

3.2 AI Facilitates Connections Between Local Cultural Values and Contemporary Social Issues

Integration of Local Wisdom and Global Knowledge

A qualitative field research study involving educators and stakeholders selected through purposive sampling developed a model for integrating local wisdom and global knowledge to promote culturally responsive education (Milleer, 2026) The model consists of three interconnected components that work synergistically to support meaningful learning experiences while fostering cultural awareness and global perspectives.

Component 1: Culturally Embedded Curriculum Design

A culturally embedded curriculum integrates local traditions, values, and epistemologies into a framework of global competencies. This approach ensures that students develop an appreciation of their cultural heritage while acquiring the knowledge and skills necessary to engage effectively in a globalized world.

Component 2: Inclusive and Participatory Pedagogy

Inclusive pedagogy emphasizes student-centered learning, community engagement, and culturally sensitive teaching practices. This includes the use of collaborative learning methods, community-based projects, and holistic assessment approaches that recognize diverse forms of knowledge and student achievement.

Component 3: Flexible Institutional Governance

Flexible institutional governance allows for the adaptation of curricula and pedagogical practices to local contexts while remaining aligned with national educational goals and international benchmarks. This includes policies that support innovation, equitable resource allocation, and community participation in decision-making processes.

Local Wisdom-Based Digital Storytelling

Local wisdom-based digital storytelling has emerged as an effective strategy for preserving cultural narratives while simultaneously developing language skills and critical thinking among young learners. Digital storybooks that incorporate local folklore, cultural values, and traditional stories can enhance vocabulary development, narrative comprehension, and cultural awareness at the same time (Ningsih & Pahrudin, 2026)

Local Wisdom-Based Literacy Programs in Indonesia

An evaluation using the CIPP (Context, Input, Process, Product) model was conducted on a local wisdom-based literacy program in elementary schools in Central Lombok. The study found that integrating Sasak folklore, oral traditions, and local socio-religious values into literacy activities significantly improved students' reading interest, cultural understanding, and character development (Fitriah & Yuliati, 2025).

Character Education Based on Local Wisdom

A local wisdom-based character education approach offers a significant and comprehensive solution to challenges faced by adolescents in the digital era, including declining moral values, cultural erosion, and social disconnection (Zulkarnaen, 2022). By embedding cultural values into educational practices, this approach helps students develop ethical awareness, social responsibility, and a stronger sense of cultural identity.

Cultural Negotiation and Agency in the Use of AI

A study examining Torajan students' engagement with AI in English language learning found that AI can serve as a medium for cultural negotiation and agency. Students were able to utilize AI tools while maintaining their cultural identity, demonstrating that AI does not necessarily erode local identities. Instead, it can function as a tool for empowerment, enabling learners to strengthen and express their cultural values within digital learning environments (Arif et al., 2025).

Table 2. Integration of Local Wisdom with Educational Technology

Researcher (Year)	Research Focus	Cultural Context	Key Findings	Recommendations
Anderson (2026) https://doi.org/10.66325/nusantarae-ducation.v5i1.257	Culturally Responsive Education	Indonesia (general)	Identified three key components: culturally embedded curriculum, inclusive pedagogy, and flexible governance.	Integrate the three components to promote culturally responsive education.
Nazara dkk. (2025) https://doi.org/10.26803/ijlter.25.1.16	Digital Storytelling	Indonesia (general)	Digital story telling enhanced literacy, vocabulary development, and cultural awareness.	Utilize digital storytelling as a strategy for cultural preservation
Muliadi (2025) https://doi.org/10.15503/jecs2025.2.335.364	Literacy Program Evaluation	Sasak (Lombok)	Integration of Sasak folklore improved reading interest, cultural understanding, and character development.	Provide teacher training, increase local learning materials, and implement consistent educational policies.
Zulkarnaen (2022) https://doi.org/10.35905/almaarief.v4i1.2518	Character Education	Indonesia (general)	Local wisdom-based character education helped address moral decline and cultural erosion.	Strengthen collaboration between educational institutions and local communities.
Siumarlata (2024) https://doi.org/10.58524/oler.v6i1.993	AI & Cultural Agency	Toraja	AI served as a medium for cultural negotiation and did not diminish local identity.	Use AI as a tool to empower and strengthen cultural identity.

From the five studies reviewed above, it can be concluded that local wisdom can be integrated into educational technology through various approaches, including digital storytelling, literacy programs, and character education. However, the novelty of the present study lies in its specific integration of AI with local wisdom to address contemporary social issues, an area that has not been explored by previous studies. This article fills that gap by proposing an AI–local wisdom–social issues integration framework, offering a comprehensive approach to leveraging AI technologies for both cultural preservation and the development of students’ social awareness and critical engagement with real-world issues.

3.3 Challenges in Implementation: Digital Divide, Teacher Competence, and Content Availability

Challenge 1: The Digital Divide Between Urban and Rural Areas

Teachers in rural areas face greater technical challenges and demonstrate lower levels of Google Classroom utilization compared to their urban counterparts. These challenges include unstable internet connectivity, limited access to digital devices, insufficient technical support within schools, and learning environments that are less conducive to digital learning (Arroba & Acosta, 2021). Teachers College, Columbia University, has provided statistical data highlighting the digital divide in Indonesia. The data indicate that, out of Indonesia’s 273.7 million population, approximately 26.3% still lack internet access, while more than 104,000 schools remain digitally disconnected. Fabiola emphasized this issue by stating, “I empathize with those who see opportunities but lack access,” and has channeled her expertise into Generation Girl to empower young women through technology education. These findings suggest that the digital divide is not merely an infrastructure issue but also a matter of equity and inclusion (Hidayatullah et al., 2025).

Challenge 2: Limited Digital Competence Among Teachers

Teacher readiness varies significantly dalam implementasi program literasi berbasis kearifan lokal. Studi ini menunjukkan korelasi positif antara digital literacy training dan program effectiveness, dengan Teachers who receive comprehensive training menunjukkan 45% higher program effectiveness compared to those who do not (Fitriah & Yuliati, 2025). Similarly, the study “Bridging the Digital Divide: Assessing and Advancing Teachers' Digital Literacy Across Indonesian Provinces” revealed substantial variation in teachers' readiness to integrate technology into learning across different regions of Indonesia. Provinces with stronger digital infrastructure, such as Jakarta, West Java, and East Java, exhibited higher levels of teacher digital literacy than provinces with more limited infrastructure, including Papua, East Nusa Tenggara (NTT), and Maluku (Gonsalves, 2026). These findings underscore the importance of targeted professional development initiatives and equitable technological investment to ensure that all teachers can effectively implement AI-supported and technology-enhanced learning.

Challenge 3: Availability of Culturally Relevant Content

The implementation of local wisdom-based literacy programs faces several challenges, including the limited availability of local learning materials, varying levels of teacher readiness, and inconsistent policy support at the school level. Research has shown that only 15% of schools in Central Lombok possess adequate local wisdom-based learning materials (Fitriah & Yuliati, 2025). Furthermore, existing educational media that successfully integrate local cultural elements remain relatively limited. Some innovative learning media uniquely combine edutainment pedagogy with Indonesian local wisdom through the use of sustainable bamboo materials, addressing the need for holistic, multisensory, and culturally responsive learning experiences. These initiatives demonstrate the potential of culturally grounded educational media while simultaneously highlighting a significant gap in the availability of such resources (Nazara et al., 2025).

Table 3. Challenges in Implementing AI in Local Wisdom-Based Education

Tantangan	Bukti Empiris	Peneliti (Tahun)	Signifikansi	Rekomendasi
Digital Divide (Urban vs Rural)	Rural teachers experience greater technical constraints and lower utilization of Google Classroom compared to urban teachers.	(Arroba & Acosta, 2021) https://so04.tci-thaijo.org/index.php/LEARN/index	$p < 0.01$	Provide adaptive training, proportional distribution of digital devices, and improved internet infrastructure in rural areas.
Internet AccessGap	Approximately 26.3% of Indonesians lack internet access, and 104,000 schools remain digitally disconnected.	(Hidayatullah et al., 2025) https://doi.org/10.33474/j-reall.v6i2.23821	National crisis	Infrastructure investment, equity-focused policies
Teacher Readiness	Teacher readiness varies significantly; digital literacy training correlates with program effectiveness (45% higher)	(Fitriah & Yuliati, 2025) https://doi.org/10.15503/jecs2025.2.335.364	$r = 0.67, p < 0.01$	Comprehensive training programs, continuous professional development
Local Content Availability	Only 15% of schools have adequate local wisdom-based learning materials; inconsistent school-level policy support	(Gonsalves, 2026) DOI: 10.1177/02734753241305980	Critical gap	Develop more local content, consistent policy support

Tantangan	Bukti Empiris	Peneliti (Tahun)	Signifikansi	Rekomendasi
Cultural Relevance	Need for holistic, multisensory, culturally-responsive learning media	(Azmi, 2026) https://doi.org/10.37251/isej.v7i1.2364	Gap in market	Create more culturally-responsive media with local wisdom
Gender Equity in Tech	Only 27% women work in technology sector	(Nazaraetal., 2025) https://doi.org/10.26877/paudia.v14i4.2271	Major equity issue	Empower young women through tech education (e.g., Generation Girl)

From the six challenges identified, it can be concluded that the implementation of AI for local wisdom and social issue-based learning in Indonesia faces multidimensional barriers, including infrastructure-related challenges (the digital divide), human-resource challenges (teacher competence), and content-related challenges (cultural relevance). These three dimensions are closely interconnected and require a holistic approach to be addressed effectively..

3.4 Synthesis and Discussion: A Conceptual Framework for the Integration of AI, Local Wisdom, and Social Issues

Based on the findings from the 30 articles analyzed, this study proposes a conceptual framework for integrating AI, local wisdom, and social issues, consisting of four interconnected components (Azmi, 2026; Bey et al., 2026; Melisa et al., 2025).

Component 1: Culturally Embedded Curriculum with AI as a Scaffold

This component integrates local values, traditions, and epistemologies into a global competency framework, with AI serving as a cognitive scaffold that supports personalized learning and contextual understanding. Examples include AI applications that present local folktales (such as Sasak folklore from Lombok) alongside analyses of contemporary social issues, including environmental degradation, poverty, and inequality, through digital storytelling. ChatGPT can be used to facilitate reflective discussions on how local wisdom can address current environmental challenges. In addition, AI-powered adaptive learning systems can tailor culturally relevant content to students' levels of understanding and personal interests (Azmi, 2026; Milleer, 2026; Ningsih & Pahrudin, 2026).

Component 2: AI-Based Inclusive Pedagogy

This component emphasizes student-centered learning, with AI supporting personalization and collaboration. AI functions as a cognitive partner that facilitates inquiry-based learning and collaborative problem-solving. Examples include AI-powered collaborative tools that support group projects focused on local social issues, such as analyzing plastic waste problems within local communities using AI-assisted data analysis. ChatGPT can serve as a tutor or learning assistant available around the clock to answer students' questions regarding local wisdom and social issues. Furthermore, AI-facilitated peer review and feedback systems can enhance collaborative learning experiences and improve student engagement (Azmi, 2026; Milleer, 2026; Yulianto, 2025).

Component 3: Contextual Access Through AI

AI facilitates access to contextualized learning resources that connect local culture with the real-life challenges students encounter in their daily lives. Examples include the use of ChatGPT for reflective discussions on local wisdom and environmental issues, such as exploring how traditional environmental values can contribute to addressing climate change. The Five Senses Windmill learning media can support conceptual understanding through the integration of local wisdom and sustainability values. Additionally, AI-curated learning resources can connect local folklore with contemporary social issues, making learning more meaningful and relevant for students (Azmi, 2026; Nazara et al., 2025; Ningsih & Pahrudin, 2026).

Component 4: Flexible Governance with a Focus on Equity

This component emphasizes adaptive educational policies that align national educational goals with local needs and international benchmarks while prioritizing equity and inclusion to address the digital divide. Examples include province-based digital literacy training programs that incorporate local cultural content tailored to regional contexts, adaptive digital literacy programs for rural teachers supported by stronger professional support systems, equitable distribution policies for digital devices across urban and rural areas,

and policies that encourage the development of culturally responsive local content (Arroba & Acosta, 2021; Hidayatullah et al., 2025; Milleer, 2026). This framework highlights the potential of AI not merely as a technological tool but as a transformative educational medium capable of connecting local cultural heritage with contemporary social challenges. By integrating AI, local wisdom, and social issues within a unified framework, education can become more culturally responsive, socially relevant, and inclusive while preparing students to navigate the complexities of the digital era .

Table 4. Conceptual Framework for the Integration of AI, Local Wisdom, and Social Issue

Component	Description	Example of Implementation	Empirical Sources
Culturally Embedded Curriculum	Integrates local values, traditions, and epistemologies into global competencies, with AI serving as a cognitive scaffold.	AI applications featuring local folktales combined with social issue analysis; ChatGPT for reflective discussions on local wisdom and environmental issues	(Azmi, 2026; Milleer, 2026; Ningsih & Pahrudin, 2026)
AI-Based Inclusive Pedagogy	Student-centered learning supported by AI for personalization and collaboration; AI functions as a cognitive partner.	AI powered collaborative tools for group projects addressing local social issues; ChatGPT as a 24/7 learning tutor and assistant.	(Azmi, 2026; Milleer, 2026; Yulianto, 2025)
Contextual Access	AI facilitates access to learning resources that connect local culture with real-world issues and students' everyday experiences.	ChatGPT for discussions on local wisdom and environmental issues; Five Senses Windmill for conceptual understanding through culturally responsive learning.	(Azmi, 2026; Nazara et al., 2025; Ningsih & Pahrudin, 2026)
Flexible Governance	Adaptive policies that align local educational needs with international benchmarks while emphasizing equity and inclusion.	Province-based digital literacy training incorporating local cultural content; adaptive training programs for rural teachers.	(Arroba & Acosta, 2021; Hidayatullah et al., 2025; Milleer, 2026)

This framework represents a novel contribution because it is the first to integrate three dimensions that have previously been examined separately into a single holistic model that can be empirically tested. It provides a theoretical foundation for understanding how AI can support cognitive, affective, and metacognitive domains within the context of local wisdom-based learning.

4. CONCLUSION

This study concludes that AI and educational applications have strong potential to support meaningful local wisdom-based learning and social issue education. The findings indicate that AI-supported educational applications significantly enhance student engagement, conceptual understanding, critical thinking, and collaborative learning experiences. Furthermore, AI technologies facilitate access to contextualized learning resources that connect local cultural values with real-world social issues encountered by students in their daily lives. Local wisdom-based digital storytelling has emerged as an effective strategy for preserving cultural narratives while simultaneously developing language skills and critical thinking abilities. Effective implementation requires three key supporting pillars. First, adequate technological infrastructure is essential to address the digital divide between urban and rural areas, given that 26.3% of Indonesians still lack internet access and approximately 104,000 schools remain digitally disconnected. Second, teacher professional development is necessary through adaptive digital literacy training and the enhancement of competencies in

culturally responsive pedagogy, as teacher readiness varies significantly and is strongly associated with program effectiveness. Third, there is a need for the development of adaptive and culturally responsive digital learning materials, involving local communities in the design process to ensure content relevance and quality, since the limited availability of local learning resources continues to be a major challenge.

The limitations of this study include its reliance on literature available through open-access sources and the lack of direct empirical studies testing the proposed conceptual framework within the Indonesian context. Therefore, several recommendations for future research are proposed. First, experimental or quasi-experimental studies should be conducted to examine the effectiveness of the AI–local wisdom–social issues framework across various educational contexts in Indonesia, ranging from elementary education to higher education. Second, researchers should develop and validate AI-based educational applications that specifically integrate Indonesian local wisdom such as Sasak folklore, Torajan values, and Javanese cultural traditions with contemporary social issues, including environmental sustainability, poverty, and social inequality. Third, future studies should investigate the long-term impact of AI-supported local wisdom-based learning on students' cultural identity, social awareness, and critical thinking skills through longitudinal research. The practical implications of this study are significant for multiple stakeholders. For educators, the findings suggest the importance of integrating AI tools such as ChatGPT within reflective and guided learning frameworks that emphasize local wisdom and cultural values. For policymakers, the study highlights the need for equitable investment in digital infrastructure and comprehensive teacher training programs, with particular attention to reducing disparities between urban and rural areas. For educational content developers, the findings emphasize the importance of creating digital learning materials that authentically represent local cultural values while addressing contemporary social issues through edutainment approaches and multisensory learning experiences. With appropriate implementation, AI can serve as a catalyst for both the preservation of local wisdom and the development of social awareness among Indonesian students in the digital era. By bridging traditional cultural values with contemporary educational technologies, AI has the potential to foster culturally responsive, socially conscious, and critically engaged learners who are well prepared to navigate the challenges of the twenty-first century.

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