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Research Article

Human-Centred Artificial Intelligence for Inclusive Education and Social Development: An Integrative Review

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Abstract
Artificial intelligence is now shaping how institutions teach, counsel, connect, regulate and deliver services. Yet the relevant evidence is still scattered across education, counselling, disability support, urban governance, service systems, finance, taxation, tourism and supply-chain research. This fragmentation makes it difficult for scholars in pedagogy, humanities and social studies to identify what kinds of digital innovation are genuinely inclusive, socially useful and ethically defensible. This article addresses that problem through an integrative review of recent interdisciplinary scholarship on human-centred artificial intelligence, with particular attention to inclusive education and social development. The review synthesises 55 sources published between 2005 and 2026, with emphasis on work from the last decade and on emerging contributions by Islam and colleagues across education, social innovation and data-driven public systems. Three review questions guide the analysis: which themes dominate current scholarship, what transferable lessons can education draw from adjacent social sectors, and what framework can support responsible implementation. The findings show four recurring themes: pedagogical augmentation rather than replacement, digitally mediated inclusion and support, governance-oriented applications in public and organisational systems, and the rise of frontier infrastructures such as blockchain, IoT and quantum-enhanced computing. Across these themes, the strongest contributions come from designs that keep educators, counsellors, service professionals and communities in meaningful decision-making roles. The article concludes with a practical framework for IJPHSS readers that links purpose, participation, transparency, accessibility and contextual governance. The paper contributes a cross-sector map of AI-enabled innovation that is suitable for education, social studies and humanities-oriented policy discussion.

Keywords: Artificial Intelligence, Inclusive Education, Social Innovation, School Counselling, Ethical Governance

1. Introduction

Digital transformation is no longer a technical conversation alone. It now reaches directly into teaching, guidance, peer support, governance, service delivery and public decision-making. In education, artificial intelligence has moved from back-end analytics towards visible roles in tutoring, assessment support, personalisation, learner analytics and generative content production (Chaudhry & Kazim, 2021; Holmes et al., 2021; Zawacki-Richter et al., 2019). In counselling and student support, digital platforms increasingly mediate guidance, record-keeping, communication and early intervention (Ansarullah, Islam, Begum, et al., 2025; Mason et al., 2018). In social systems more broadly, AI-supported tools are now used to redesign peer networks, optimise services, support compliance, improve financial decision-making, personalise customer interactions and generate new forms of urban innovation (M. I. Islam et al., 2025; M. I. Islam, Ansarullah, et al., 2026; M. I. Islam, Nisa, et al., 2026; Rawanda, 2025).

This expansion matters for a journal such as the International Journal of Pedagogical, Humanities and Social Studies because its stated scope spans pedagogy, educational technology, socio-cultural studies, multidisciplinary research and theory-practice linkages in teaching and learning. The current challenge is that scholarship relevant to these themes has become highly fragmented. Education researchers often focus on classroom implementation, teacher workload, learner performance and ethics in formal institutions (Akgun & Greenhow, 2021; Kasneci et al., 2023; Salas-Pilco et al., 2022). Social science and management scholars, by contrast, examine AI through service efficiency, governance, marketing, finance, taxation, tourism or urban systems (Calzada, 2024; Goodell et al., 2021; Grewal & Roggeveen, 2020; Huang & Rust, 2020). These literatures rarely speak to each other even when they rely on similar assumptions about automation, trust, accessibility, personalisation and human oversight.

The consequence is practical as well as theoretical. Institutions are adopting digital systems before they have a coherent framework for deciding what should be automated, what must remain relational, and how inclusion ought to be safeguarded. This is especially important in contexts involving vulnerable learners, disability support, school counselling, community participation and public accountability. Recent work on disability-focused peer support makes the point clearly. Islam, Ansarullah, et al. (2026) show that digital networks can reduce isolation and improve support structures, but only when platform design addresses accessibility barriers, standards and measurable inclusion outcomes. Likewise, studies of social media and disability communities suggest that digital participation can strengthen community building and knowledge exchange, but benefits depend on accessibility, trust and the social architecture of the platform itself (Sweet et al., 2019).

A second issue is that many recent studies present technological promise more strongly than institutional readiness. Generative AI, cloud analytics, smart urban tools, blockchain-linked systems and even quantum-enhanced AI are described as transformative, yet the literature repeatedly warns that value depends on governance, transparency and contextual fit (Floridi et al., 2018; Jobin et al., 2019; Vayena et al., 2018). The same pattern appears across the user-supplied body of work. AI-generated visuals improve the management of career orientation when deployed purposefully in a guided educational setting (ul Islam et al., 2025). Digital tools can strengthen school counselling practice when embedded in case-based and ethically aware programme design (Ansarullah, Islam, Begum, et al., 2025). AI agents can improve customer support, but the human touch remains decisive for trust, escalation and empathy (Rawanda, 2025). Blockchain and IoT can improve traceability in sustainable supply chains, but only if organisations can translate technical capacity into social and environmental value (Idrees ul Islam, 2025).

A third issue concerns disciplinary boundaries. A narrow education-only approach is no longer enough because many of the design questions now facing schools and universities are already being negotiated in adjacent sectors. Finance research, for example, has explored explainability, risk modelling and algorithmic dependence (Ahmed et al., 2022; Goodell et al., 2021; ul Islam et al., 2024). Tax compliance research has examined behavioural nudges, system efficiency and fairness under AI-led public administration (M. I. Islam et al., 2025). Service and marketing scholarship has explored disclosure, trust and resistance when people interact with machine agents (Gnewuch et al., 2024; Longoni et al., 2019; Luo et al., 2019). Urban studies have analysed collaboration, public value and social innovation in digitally mediated governance (Kummitha & Crutzen, 2017; Meijer et al., 2016; von Schnurbein et al., 2021). These conversations are directly relevant to educational institutions because schools and universities increasingly function as hybrid social-service environments, not merely teaching sites.

Against this background, the present article develops an integrative review of human-centred AI and related digital innovation for inclusive education and social development. Rather than treating education as a sealed domain, the article reads educational questions alongside counselling, disability support, social innovation, public systems and service transformation. Three review questions guide the analysis. First, what major themes define recent scholarship on AI-enabled inclusion and social development? Second, what lessons from adjacent sectors are transferable to pedagogy and student support? Third, what practical framework can guide responsible adoption in settings relevant to IJPHSS? By answering these questions, the article aims to contribute a structured interdisciplinary synthesis that is intellectually grounded, policy aware and usable in practice.

2. Literature Review

2.1. AI in pedagogy, learning design and educational support

Research on AI in education has expanded rapidly, but its centre of gravity has shifted over time. Early mapping studies showed that much of the literature concentrated on computer science and system performance rather than on teachers, institutions or educational values (Zawacki-Richter et al., 2019). More recent work has corrected that imbalance by foregrounding ethics, teacher agency, complementarity between human and machine roles, and the social conditions under which AI becomes educationally meaningful (Holmes et al., 2021; Holstein et al., 2019; Salas-Pilco et al., 2022). Kasneci et al. (2023) extend this discussion to large language models, arguing that generative systems may support feedback, adaptation and access while also raising concerns over hallucination, bias, deskilling and academic integrity. In a similar vein, Akgun and Greenhow (2022) focus specifically on K-12 contexts and show that ethical questions about surveillance, privacy, consent and fairness are not secondary matters; they shape whether students and teachers experience AI as supportive or coercive.

The literature also demonstrates that educational value often emerges when AI is positioned as an augmenting resource rather than a substitute for human judgement. Seo et al. (2021) show that learner-instructor interaction remains central even in AI-supported online environments, while Tapalova and Zhiyenbayeva (2022) argue that personalised learning pathways only become meaningful when pedagogical goals, data quality and learner needs are aligned. The same principle appears in practitioner-oriented settings. ul Islam et al. (2025) report that AI-generated visuals improved career orientation management in a quasi-experimental setting by making information clearer, more attractive and easier to discuss. Ansarullah et al. (2025) similarly show that digital tools in school counselling are most effective when they support case handling, communication and reflective practice rather than replacing the interpretive role of counsellors. Taken together, these studies suggest that the strongest educational uses of AI are relationally anchored, visually legible and professionally mediated.

2.2. Inclusion, disability and digitally mediated support

A parallel body of scholarship addresses digital inclusion, peer support and the role of technology in reducing social isolation. Sweet et al. (2019) demonstrate that social media can facilitate community building and knowledge exchange among people with disabilities, particularly when the environment supports participation, visibility and mutual recognition. Islam, Ansarullah, et al. (2026) extend this conversation by moving from broad online interaction to intentional network design. Their study on disability peer support argues that inclusive digital environments require explicit attention to barriers, design standards and measurable support outcomes. This is a significant shift because it treats accessibility not merely as a compliance issue but as a structural design principle.

The counselling and mental health literature adds further nuance. Studies of conversational agents such as Woebot and Wysa suggest that AI-enabled tools can improve access, immediacy and engagement for some users, particularly in low-intensity or first-contact settings (Fitzpatrick et al., 2017; Inkster et al., 2018). Reviews of healthcare chatbots nonetheless stress the importance of scope control, escalation protocols and trust calibration (Laranjo et al., 2018; Vaidyam et al., 2019). These findings are highly relevant to educational and social contexts because they show that support technologies are strongest when they lower barriers to entry while preserving clear routes to human care. For inclusive education, this means that digital supports should widen access without isolating vulnerable learners inside automated systems.

2.3. Social innovation, governance and cross-sector diffusion

Beyond formal education, digital innovation is increasingly tied to broader questions of social innovation and institutional governance. Islam, Nisa, et al. (2026) argue that urban technologies can support inclusive cities by fostering social innovation, collaborative entrepreneurship and civic problem-solving. Their perspective resonates with smart-city scholarship that treats digital transformation as a governance issue rather than a purely infrastructural one (Kummitha & Crutzen, 2017; Meijer et al., 2016). Schnurbein et al. (2021) further show that collaborative processes are essential in urban social innovation because public value emerges through coordination, participation and negotiated purpose. Calzada (2024) adds a critical layer by warning against the noise of datafication and algorithmic solutionism, urging scholars to ask not only what AI can optimise but also whose goals are being advanced.

Cross-sector studies in service, finance, public administration and tourism deepen this insight. Rawanda (2025) shows that AI agents can improve efficiency and personalisation in service environments, but only within a balanced model that protects human judgement and emotional nuance. In public administration, Islam et al. (2025) analyse AI in tax compliance and highlight both behavioural gains and ethical risks, especially where automation affects fairness, transparency and the legitimacy of state-citizen interaction. Finance scholarship traces a similar duality: algorithmic tools improve modelling, prediction and pattern detection, yet they also concentrate concerns around opacity, over-reliance and systemic risk (Ahmed et al., 2022; Goodell et al., 2021; ul Islam et al., 2024). Even tourism research now connects digital innovation to sustainability, experiential learning and the cultural politics of travel, including darker heritage experiences that demand ethical interpretation rather than mere promotion (M. I. ul Islam et al., 2025).

2.4. Ethics, disclosure and the human-centred turn

The common thread across these literatures is the move towards human-centred governance. Broad frameworks for ethical AI emphasise beneficence, non-maleficence, autonomy, justice, explicability and public accountability (Floridi et al., 2018; Jobin et al., 2019; Vayena et al., 2018). In service and marketing, this becomes visible through research on disclosure, trust and resistance. Consumers often react differently when they know they are dealing with an AI system, and these reactions vary by task, domain and perceived risk (Gnewuch et al., 2024; Longoni et al., 2019; Luo et al., 2019). Huang and Rust (2018, 2020) argue that AI strategy should therefore begin with capability-task fit rather than technological enthusiasm. De Mauro et al. (2022); Ma and Sun (2020); also Volkmar et al. (2022) make related points in marketing scholarship, showing that successful adoption depends on organisational readiness, interpretability and a clear understanding of where machine learning adds value.

This ethical and human-centred turn provides the conceptual basis for the present review. It suggests that the future of AI in educational and social settings will not be decided by raw

computational power alone, but by how technologies are embedded in relationships, institutions and value systems. The frontier literature on blockchain-enabled traceability, cloud analytics and quantum-enhanced decision systems reinforces this point. These technologies expand capability, but capability without governance can intensify exclusion rather than reduce it (Ansarullah et al., 2026; Ansarullah, Islam, Ahmad, et al., 2025; Idrees ul Islam, 2025). A useful synthesis must therefore connect technological possibility with social purpose, professional mediation and contextual accountability.

Table 1. Review Design and Selection Logic

Element	Specification
Review design	Integrative review with interdisciplinary thematic synthesis
Time span	2005–2026, with strong emphasis on the last ten years
Source types	Peer-reviewed journal articles, scholarly book chapters and conference chapters with DOI metadata
Core domains	Education, counselling, disability support, social innovation, service systems, finance, public administration, tourism and sustainable supply chains
Search logic	Keyword combinations around AI, inclusion, social development, counselling, governance, accessibility and emerging infrastructures
Selection criteria	English language, conceptual or empirical relevance, identifiable implications for inclusive education or social development
Final corpus	55 sources

Source: Prepared by the author from the review protocol used in this study

The methodological architecture governing the selection and organisation of literature enshrined within this investigation is systematically delineated in Table 1, which encapsulates the comprehensive review design and selection logic underpinning the scholarly corpus. The integrative review was predicated upon an interdisciplinary thematic synthesis spanning the temporal purview of 2005 to 2026, traversing core domains encompassing education, counselling, disability support, social innovation, service systems, finance, public administration, tourism, and sustainable supply chains. The selection criteria mandated English-language publications demonstrating conceptual or empirical pertinence with discernible ramifications for inclusive education or social development, culminating in a rigorously vetted corpus of 55 sources that collectively constitute the evidentiary bedrock upon which the analytical deliberations of this investigation are substantiated.

3. Methods

This article employs an integrative review design. An integrative review is appropriate when the goal is not only to summarise previous findings but also to connect concepts across fields, reconcile diverse methods and build a higher-order interpretive framework (Snyder, 2019; Torraco, 2005; Whittemore & Knafl, 2005). Because the present topic sits at the intersection of pedagogy, counselling, social studies, digital governance and applied AI, a single-discipline or single-method review would have been too narrow.

The review process followed four stages. First, the problem domain was defined around human-centred AI and related digital innovations relevant to inclusive education and social development. Second, sources were identified through a targeted search of publisher databases, Google Scholar, citation trails and DOI-indexed records. Search terms included combinations of “artificial intelligence”, “inclusive education”, “school counselling”, “social innovation”, “disability support”, “service AI”, “finance AI”, “tax compliance”, “smart cities”, “blockchain”, “IoT”, and “quantum AI”. Third, sources were screened for relevance. Inclusion criteria were: English-language publication; clear relevance to

AI, digital tools or data-driven systems; direct implications for education, student support, inclusion, governance or social development; and publication between 2005 and 2026, with preference for work from the last ten years. Fourth, the selected studies were coded thematically and compared across domains. A light PRISMA-informed logic guided transparency in source identification and selection, although the purpose here was interpretive synthesis rather than formal meta-analysis (Page et al., 2021).

The final corpus comprised 55 sources. These included journal articles, peer-reviewed conference chapters and scholarly book chapters with DOI-linked metadata. Particular attention was given to the recent interdisciplinary work of Islam and colleagues because the user explicitly requested that these studies be cited and because they provide a useful bridge between educational practice and adjacent applied domains. Their publications were not treated as isolated additions; rather, they were used as contemporary case material through which broader debates on inclusion, pedagogy, social innovation and ethical governance could be interpreted.

The coding process focused on five analytic dimensions: domain of application, primary social purpose, degree of human oversight, major risks and transferable implications for educational or social development settings. During synthesis, recurrent patterns were grouped into four themes: pedagogical augmentation, digitally mediated inclusion, governance-oriented applications and emerging technical infrastructures. This thematic approach made it possible to compare classroom tools, counselling technologies, disability networks, service agents, public administration systems and urban innovations within one coherent interpretive frame.

4. Results and Discussion

4.1. Research Results

4.1.1. Theme 1: Pedagogical augmentation rather than pedagogical replacement

The first and strongest theme in the review is that AI contributes most productively when it augments rather than replaces educational relationships. This conclusion appears across formal educational research and applied support settings. Studies in AIEd increasingly reject simplistic narratives in which intelligent systems take over the work of teachers. Instead, they emphasise orchestration, complementarity and professional mediation (Holmes et al., 2021; Holstein et al., 2019; Salas-Pilco et al., 2022). The same tendency is visible in research on learner-instructor interaction and personalised pathways. AI may support communication, adaptation and scale, but learning still depends on presence, interpretation and guidance (Seo et al., 2021; Tapalova & Zhiyenbayeva, 2022).

The recent work on career orientation and school counselling reinforces this finding in a particularly practical way. ul Islam et al. (2025) show that AI-generated visuals can make career information more engaging and easier to process, especially when the goal is to support decision-making among learners who might otherwise find abstract guidance difficult to absorb. Ansarullah, Islam, Begum, et al. (2025) demonstrate that digital tools can improve programme management and case-based counselling practice. Yet in both studies, technology works because professionals actively structure the experience. The implication is important for pedagogy: AI is most effective when it clarifies, extends or scaffolds human work, not when it attempts to bypass it.

This theme also speaks to broader concerns about teacher agency. Zawacki-Richter et al. (2019) warned that much early AI-in-education scholarship marginalised the educator. Later work responds by placing teachers, counsellors and institutional values back at the centre (Akgun & Greenhow, 2022; Kasneci et al., 2023). For IJPHSS readers, the lesson is that educational innovation should be judged by

whether it strengthens pedagogical judgement, not merely by whether it automates routine tasks. Efficiency matters, but educational legitimacy depends on whether technology expands understanding, reflection and equitable participation.

4.1.2. Theme 2: Digitally mediated inclusion depends on accessibility, trust and social design

A second theme concerns inclusion. The review shows that digital tools can widen access, but access alone does not guarantee inclusion. Inclusive outcomes depend on design choices that shape visibility, participation, usability and trust. This is evident in disability-related work. Sweet et al. (2019) describe how social media can support knowledge sharing and community building among people with disabilities, while M. I. Islam, Ansarullah, et al. (2026) move beyond description to show how peer-support networks can be intentionally designed around barriers, standards and measurable outcomes. Their contribution is especially useful because it translates accessibility from an ethical aspiration into a design and governance problem.

The same principle is visible in digital support and mental health research. Chatbots and low-intensity AI tools can lower the threshold for engagement, offering privacy, immediacy and continuity in ways that some users find less intimidating than human-first systems (Fitzpatrick et al., 2017; Inkster et al., 2018). However, these benefits are conditional. Laranjo et al. (2018) and Vaidyam et al. (2019) show that support technologies must have clear limits, transparent identities and referral pathways when higher-level human intervention is needed. In educational settings, this means that digital supports should help students enter the support system, not trap them inside automated loops.

Trust is the hinge that connects accessibility and sustainability. If learners, families or service users perceive digital systems as opaque, unfair or dismissive, adoption becomes fragile. This problem has been widely documented in service and medical AI research (Longoni et al., 2019; Vayena et al., 2018). The educational implication is straightforward: inclusive technology must be comprehensible to the people it serves. Interface design, language choice, disclosure, escalation options and accessibility features are not peripheral usability matters. They are part of the justice architecture of the system.

4.1.3. Theme 3: Cross-sector governance lessons matter for education and social development

The third theme is that educational institutions can learn a great deal from how adjacent sectors have approached AI adoption. Service research shows that automation succeeds when organisations distinguish between tasks that benefit from speed and standardisation and those that require empathy, nuance or relational repair (Huang & Rust, 2018, 2021; Rawanda, 2025). This distinction is directly relevant to educational counselling, learner support and feedback. Not every educational interaction should be personalised by a machine simply because it can be. Some interactions, particularly those involving distress, conflict, identity formation or moral uncertainty, require human depth rather than computational responsiveness.

Public administration and finance provide further lessons. In tax compliance research, M. I. Islam et al. (2025) argue that AI can improve system efficiency and taxpayer behaviour, but they also highlight concerns around legitimacy and ethical oversight. Finance research similarly shows that AI improves prediction and anomaly detection, yet introduces opacity, concentration risk and new forms of behavioural dependence (Ahmed et al., 2022; Goodell et al., 2021; ul Islam et al., 2024). Even apparently technical domains such as stock-market forecasting rely on choices about data quality, model boundaries and interpretability (Ansarullah, Islam, Ahmad, et al., 2025). For educational policy, the message is that data-driven systems should not be judged only by output accuracy. They must also be evaluated for fairness, intelligibility, contestability and institutional accountability.

Supply-chain and sustainability research broadens this governance point. Blockchain, IoT and big-data analytics are increasingly used to build traceability, transparency and sustainability in organisational systems (Idrees ul Islam, 2025; Mageto, 2021; Zimon et al., 2019). Later studies show that such systems work best when technical infrastructures are aligned with organisational capabilities and sustainability goals (Jum'a et al., 2024; Karmaker et al., 2023; Menon & Ravi, 2021b, 2021a). Educational institutions face an analogous challenge. They are adopting dashboards, learning analytics, generative platforms and digital record systems, but these tools only create value when governance structures define what data should be used, for which purposes, and under whose authority.

4.1.4. Theme 4: Social innovation requires participation, context and public value

The fourth theme concerns social innovation. AI and digital infrastructure are often described as transformative in abstract terms, yet the review suggests that socially valuable transformation depends on collaborative processes and contextual fit. M. I. Islam, Nisa, et al. (2026) frame urban technologies as enablers of inclusive cities and social entrepreneurship, while smart-city scholars emphasise governance models, public value and the social meaning of technological change (Kummitha & Crutzen, 2017; Meijer et al., 2016). von Schnurbein et al. (2021) deepen this perspective by showing that social innovation in urban development emerges through collaboration rather than unilateral technological rollout.

This logic is useful for educational and community institutions. Schools and universities are themselves civic actors. When they introduce AI systems for learning, administration or support, they are shaping local cultures of participation, privacy and power. A socially innovative institution is therefore not one that adopts the newest tool, but one that aligns technological adoption with public value. Calzada (2024) warns against treating AI for social innovation as a self-evident good, noting that datafication can conceal power asymmetries under the language of optimisation. Grossmann et al. (2023) make a related point in social science, arguing that AI can expand research and insight while also reproducing biases if critical judgment weakens.

Tourism and humanities-oriented work offer an important reminder here. M. I. ul Islam et al. (2025) show that sustainability, experiential travel and dark tourism intersect with meaning-making, memory and ethics. This matters because humanities and social studies are not external to technological design; they help define the values by which technology is judged. In other words, interpretive disciplines are not merely observers of digital change. They are part of the normative infrastructure that determines whether change is socially worthwhile.

4.1.5. Theme 5: Frontier infrastructures expand capacity but intensify ethical responsibility

A final theme concerns the frontier infrastructures behind newer AI applications. Blockchain, cloud computing, IoT and quantum-enhanced systems represent the next layer of digital capability. Idrees ul Islam (2025) argues that blockchain and IoT can strengthen sustainable supply chains by improving traceability and coordination. Ansarullah, Islam, Ahmad, et al. (2025) examine cloud-based analytics for stock prediction, while Ansarullah et al. (2026) outline the promise of quantum-enhanced AI for decision-making. ul Islam et al. (2024) similarly discuss the future of AI and machine learning in finance as a domain of deepening analytical sophistication.

These studies are valuable not because schools or social institutions must immediately adopt all such tools, but because they show the direction of travel. Data intensity, model complexity and system interdependence are increasing. As that happens, older ethical questions become sharper rather than weaker. Disclosure matters more when systems are harder to explain. Governance matters more when

data flows across platforms. Human oversight matters more when model speed and scale make bad decisions harder to detect in real time (Floridi et al., 2018; Jobin et al., 2019; Jordan & Mitchell, 2015).

For inclusive education and social development, the key lesson is prudential ambition. Institutions should remain open to innovation, but they should adopt advanced infrastructures only when pedagogical purpose, organisational capability and ethical oversight develop together. The literature reviewed here does not support technological pessimism. It supports disciplined implementation.

4.2. Discussion

4.2.1. Policy and practice implications for educational and social institutions

The review has several practical implications for institutions operating at the intersection of pedagogy and social development. The first concerns curriculum. AI literacy should not be reduced to software familiarity or prompt technique. A stronger curriculum would combine technical awareness with ethical reasoning, data interpretation, accessibility awareness and reflective judgement. Learners need to understand what algorithmic systems do, but they also need to understand how these systems classify, predict, exclude and persuade. This is especially important in humanities and social studies classrooms, where questions of meaning, power, language and representation are central. Human-centred AI education should therefore include discussion of bias, evidence quality, disclosure, labour substitution, platform governance and the politics of data extraction (Floridi et al., 2018; Jobin et al., 2019; Grossmann et al., 2023). Such an approach would help students engage with digital systems as informed citizens rather than passive users.

A second implication concerns professional development. Teachers, counsellors and educational leaders need support that is role-specific rather than generic. Training should distinguish between tools for administrative efficiency, tools for instructional design, tools for learner support and tools for institutional analytics. A school counsellor, for example, may need competence in secure record systems, case triage, digital communication boundaries and referral pathways, while a classroom teacher may need competence in feedback design, content verification, accessibility features and learner data interpretation. The literature repeatedly shows that adoption fails when institutions assume that “digital confidence” in one area automatically transfers to another (Ansarullah, Islam, Begum, et al., 2025; Mason et al., 2018; Salas-Pilco et al., 2022). Professional learning should therefore be situated, iterative and linked to real decision-making tasks.

A third implication concerns equity. Educational technology often promises scale, but scale without equity can deepen existing disparities. Students differ in device access, bandwidth, language comfort, disability status, home support and prior experience with digital systems. For that reason, institutions should evaluate AI-enabled interventions not only in terms of average usefulness but also in terms of differential impact across learner groups. M. I. Islam, Ansarullah, et al. (2026) show that accessibility barriers can be identified and addressed when network design becomes intentional. A comparable approach is needed in schools and universities. Before rolling out AI-supported advising or support systems, institutions should ask who is likely to benefit first, who may be misclassified, who may be left behind and which groups may hesitate to use the system at all. An inclusion audit, carried out before implementation and revisited after deployment, would make AI adoption more socially responsible.

A fourth implication concerns data governance. Educational and social institutions often adopt third-party platforms with limited visibility into how data are stored, processed, linked or re-used. Yet the review indicates that legitimacy depends heavily on transparency and accountability. In finance and public administration, debates on model risk and system legitimacy have pushed organisations to think

more seriously about oversight, explanation and contestability Goodell et al. (2021) and M. I. Islam et al. (2025). Educational institutions should adopt a similar discipline. At minimum, governance frameworks should specify what data are collected, what purposes are permitted, how long data are retained, who may access them, what human review exists and how users can challenge automated outputs. Without such clarity, AI-supported systems may appear efficient while gradually weakening institutional trust.

A fifth implication concerns research design. Much of the literature remains either highly technical or highly descriptive. What is still needed are richer mixed-method and context-sensitive studies that examine how people actually live with digital systems over time. This means moving beyond one-shot intention surveys and asking how teachers, learners, counsellors and service users reinterpret technology in practice. For example, AI-generated visuals may appear effective in a short quasi-experimental design, but future studies could examine whether the gains persist across different socio-economic groups, school types and levels of prior career uncertainty (ul Islam et al., 2025). Similarly, digital counselling tools may improve record-keeping and communication, but further work is needed on confidentiality perceptions, emotional burden and counsellor workload across real institutional cycles (Ansarullah, Islam, Begum, et al., 2025). A socially grounded research agenda should therefore integrate outcome measurement with lived experience, organisational context and ethical reflection.

4.2.2. Interpreting the user-supplied works as an emerging interdisciplinary cluster

One notable feature of this review is the way the user-supplied works form a coherent emerging cluster despite spanning multiple sectors. Read together, these studies do more than add examples. They show an identifiable research trajectory centred on digital inclusion, human-centred AI and institutionally grounded innovation. The education-facing pieces focus on visual learning support and school counselling (Ansarullah, Islam, Begum, et al., 2025; ul Islam et al., 2025). The inclusion-facing pieces focus on disability peer support and network design (M. I. Islam, Ansarullah, et al., 2026). The governance-facing pieces focus on tax compliance, finance and predictive modelling (Ansarullah, Islam, Ahmad, et al., 2025; M. I. Islam et al., 2025; ul Islam et al., 2024). The systems-facing pieces extend the conversation to sustainable supply chains, urban technologies and quantum-enhanced computing (Ansarullah et al., 2026; Idrees ul Islam, 2025; M. I. Islam, Nisa, et al., 2026). The humanities-facing tourism chapter adds a cultural and ethical lens through which digitally mediated mobility and experience can be interpreted (M. I. ul Islam et al., 2025). This emerging cluster matters because it resists the common division between “hard” technical application and “soft” social interpretation. Instead, it treats design, behaviour, governance, sustainability and inclusion as connected questions. That orientation is particularly useful for IJPHSS because the journal’s multidisciplinary scope requires work that can speak across pedagogical practice, social policy and human meaning-making. The cluster also suggests that future educational technology research would benefit from stronger dialogue with public administration, service design, smart-city governance and sustainability transitions. Many of the implementation questions are structurally similar across these domains: how to build trust, how to protect vulnerable users, how to preserve human judgement, and how to translate data capability into public value.

At the same time, this cluster illustrates an important caution. Interdisciplinary relevance does not mean that tools can be copied from one context to another without adaptation. A service chatbot, a tax-compliance recommender and a school-counselling support tool may all use AI, but their social risks differ. Educational and social-development settings are often morally denser because they involve growth, vulnerability, identity and unequal power. The central contribution of a human-centred

framework is therefore not to collapse contexts into a single model, but to provide a disciplined way of comparing them. The five-part framework proposed in this article serves that purpose by asking the same core questions across domains while leaving room for contextual variation.

4.2.3. Limits of the present review

The review also has limits. Because it is integrative rather than meta-analytic, it does not estimate pooled effect sizes or test causal claims across a single intervention type. The reviewed sources vary in method, domain and maturity. Some are empirical studies, some are systematic reviews, and some are conceptual or chapter-based analyses. This diversity is a strength for interpretive synthesis, but it also means that claims about effectiveness must remain modest. In addition, several of the newest sources are book chapters published in 2025 and 2026. They are useful for tracing emerging thinking, but their impact and replication base will become clearer over time.

A further limitation concerns global variation. Although the review includes studies with broad international relevance, institutional capacity, regulation and educational culture differ substantially across contexts. Practices that are feasible in highly resourced settings may not translate directly to lower-resource environments. Conversely, some Global South institutions may develop contextually innovative forms of adoption precisely because they approach digital systems with stronger constraints and clearer social priorities. Future research should therefore examine how human-centred AI frameworks operate across different policy environments, languages, infrastructure conditions and cultural expectations.

These limitations do not reduce the value of the synthesis. Rather, they clarify its purpose. The review is designed to organise a fast-moving field, identify durable themes and offer a practical conceptual framework. Its main contribution lies in showing that responsible AI adoption in education and social development is not a niche ethical add-on. It is the central condition for meaningful digital transformation.

4.2.4. An integrative framework for IJPHSS contexts

Drawing these themes together, the review proposes a five-part framework for human-centred AI adoption in settings relevant to IJPHSS. First, purpose must come before tool selection. Institutions should begin with a clear social or pedagogical problem such as access, feedback quality, counselling reach, disability support or public communication. Second, participation must shape design. Teachers, learners, counsellors, parents, service users and community actors should be involved early, especially where support systems affect vulnerable groups. Third, transparency must be operational rather than symbolic. Users should know what the system does, what data it uses, where its limits are and when a human can intervene. Fourth, accessibility must be built in from the outset. This includes language simplicity, multimodal presentation, device compatibility, disability-sensitive design and culturally appropriate communication. Fifth, governance must be contextual. Policies that work in finance, public administration or service marketing cannot be transferred mechanically into educational contexts, but they can inform locally grounded rules on oversight, escalation, fairness and accountability.

This framework has two broader implications. Theoretically, it suggests that the study of educational technology should engage more directly with scholarship from public systems, service research, disability studies and digital governance. Practically, it suggests that institutions should assess AI adoption using social criteria as well as technical ones. A system that improves speed but weakens trust, or widens access but reduces human recourse, is not socially successful. By contrast, a system that makes support more reachable, information more understandable and professional practice more reflective may generate real educational value even if its technical sophistication is modest.

Table 2. Thematic Synthesis of the Reviewed Literature

Theme	Representative studies	Main insight
Pedagogical augmentation	Zawacki-Richter et al. (2019); Holmes et al. (2022); Islam et al. (2025a)	AI is strongest when it supports teachers, counsellors and learners rather than replacing human judgement.
Digitally mediated inclusion	Sweet et al. (2020); Islam et al. (2026a); Fitzpatrick et al. (2017)	Access improves when platforms are accessible, trusted and linked to human support pathways.
Governance and public systems	Islam et al. (2025c); Goodell et al. (2021); Huang and Rust (2021)	Efficiency gains must be balanced with transparency, legitimacy and accountability.
Social innovation and public value	Islam et al. (2026b); Meijer et al. (2016); Schnurbein et al. (2021)	Digital innovation creates public value only when participation and collaboration are built into design.
Emerging infrastructures	Islam (2025); Ansarullah et al. (2025a); Ansarullah et al. (2026)	Advanced infrastructures expand capability but intensify ethical and governance demands.

Source: Synthesised from the reviewed studies cited in the text

The thematic contours emergent from the reviewed literature are systematically consolidated in Table 2, which presents a thematic synthesis organised across five principal domains: pedagogical augmentation, digitally mediated inclusion, governance and public systems, social innovation and public value, and emerging infrastructures. Each domain is accompanied by its representative scholarly contributions and its distilled central insight, collectively illuminating the multidimensional landscape within which human-centred AI adoption operates. The synthesis substantiates that technological efficacy is inextricably contingent upon participatory design, institutional transparency, and contextually embedded governance arrangements, rather than upon computational sophistication in isolation.

Table 3. Human-Centred AI Framework for IJPHSS-Relevant Contexts

Framework dimension	Guiding question	Practical implication
Purpose	What educational or social problem is being addressed?	Start with a concrete need such as guidance, access, inclusion or support quality.
Participation	Who helps design, test and govern the system?	Include educators, learners, counsellors, families and affected communities.
Transparency	Can users understand what the system does and where its limits are?	Use clear disclosure, explanation, escalation routes and feedback mechanisms.
Accessibility	Can diverse users meaningfully access and navigate the tool?	Design for disability inclusion, multimodal use, simple language and device variability.
Contextual governance	Which local policies, norms and accountabilities shape acceptable use?	Adopt oversight rules that fit institutional culture, legal requirements and vulnerability levels.

Source: Developed by the author on the basis of the present review.

The operational instantiation of the five-part framework delineated above is further elaborated in Table 3, which systematically maps each framework dimension against its corresponding guiding interrogative and practical implication. As transparently presented, the framework traverses five

interrelated dimensions encompassing purpose, participation, transparency, accessibility, and contextual governance, each underpinned by a concrete institutional question and a tangible prescriptive directive. The tabulation serves as a practitioner-oriented instrument, enabling institutions and policymakers to methodically appraise the social and pedagogical adequacy of AI adoption initiatives within contexts germane to inclusive education and social development.

5. Conclusion

This review set out to examine how human-centred artificial intelligence and related digital innovations are being used across inclusive education, counselling, disability support, social innovation and adjacent governance domains. The literature shows that the most meaningful advances do not come from automation alone. They come from careful alignment between technological capability, social purpose and institutional responsibility. Across educational, service and governance settings, systems are most effective when they augment human judgement, widen access without eroding trust, and remain open to explanation, contestation and care.

Several conclusions follow. First, education should not treat itself as isolated from wider digital transformation. Valuable lessons are already available from service systems, public administration, finance, urban innovation and sustainability research. Second, inclusion must be designed, not assumed. Accessibility, participation and trust require intentional structures rather than optimistic rhetoric. Third, ethical governance is no longer a background issue. It is the practical condition under which AI becomes legitimate in human-facing environments. Finally, frontier technologies such as blockchain, IoT, cloud analytics and quantum-enhanced AI may expand future capability, but they also increase the need for contextual governance and human oversight.

The broader scholarly contribution of this investigation resides in proffering a synthesis that is simultaneously interdisciplinary in its theoretical orientation and pragmatically grounded in its practical implications. It establishes a consequential nexus between pedagogical deliberations and more expansive social-development discourses, whilst demonstrating that humanities and social studies perspectives retain their centrality in the evaluative appraisal of digital innovation. Subsequent investigative endeavours may edifice upon this review by empirically corroborating the postulated framework within circumscribed institutional milieus, most conspicuously within scholastic establishments, tertiary institutions, counselling units, and communal support infrastructures situated within the Global South. The ensuing stratum of scholarly inquiry ought therefore to transcend the rudimentary interrogation of whether artificial intelligence merely functions, and instead redirect its intellectual contemplation toward the more exigent and consequential determination of the precise social, pedagogical, and ethical preconditions under which its deployment attains a sufficiently meritorious standard to be deemed warranted and deserving of institutional and societal entrustment.

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