Rethinking education: artificial Intelligence, empathy, and emerging ethical challenges

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ABSTRACT

This paper examines how artificial intelligence (AI) enters classrooms and changes the way teachers and students relate to each other. We focus on both the opportunities it offers and the ethical questions it raises. Using the framework of Emotional-Intelligence (EI) theory, we reviewed sixty-eight studies published between 2016 and 2025. The review draws together findings on personalised learning systems, predictive analytics, affect-sensing tools, and the automation of routine schoolwork. When these technologies are carefully regulated, they can help teachers and learners develop self-awareness, social understanding, and stronger classroom relationships. At the same time, concerns about bias in algorithms, constant data collection, the loss of personal contact, and gaps in teacher training still threaten fair and empathic use of AI. We suggest policies, teacher-training measures, and design practices that keep human connection at the centre of learning so that AI supports, rather than replaces, the empathy that education depends on.

KEYWORDS

Artificial intelligence; empathy; ethical challenges; human-centered education; socio-emotional learning

RÉSUMÉ

Cet article étudie l'arrivée de l'intelligence artificielle (IA) dans les établissements scolaires et la façon dont elle transforme la relation entre enseignants et élèves. Il s'intéresse aux possibilités offertes par ces outils mais aussi aux questions éthiques qu'ils soulèvent. En nous appuyant sur la théorie de l'intelligence émotionnelle (IE), nous avons passé en revue sixty-eight études parues entre 2016 et 2025. Cette analyse regroupe les résultats sur les systèmes d'apprentissage personnalisé, l'analytique prédictive, l'informatique affective et l'automatisation des tâches scolaires. Lorsqu'elles sont utilisées avec des règles éthiques claires, ces technologies peuvent contribuer à développer la conscience de soi, la sensibilité sociale et la qualité des relations en classe. Mais des problèmes demeurent : biais dans les algorithmes, collecte massive de données, perte de proximité humaine et manque de formation des enseignants. Nous proposons des politiques, des dispositifs de formation et des principes de conception qui placent la relation humaine au cœur de l'enseignement, afin que l'IA reste un appui plutôt qu'un substitut à la pédagogie empathique.

MOTS-CLÉS

Intelligence artificielle, empathie, enjeux éthiques, éducation centrée sur l'humain, apprentissage socio-émotionnel

INTRODUCTION

In the last few years, schools and universities have been reshaped by a wave of artificial-intelligence (AI) tools. Adaptive learning programs, online tutoring systems, generative text- and image-based software, and even automated teaching assistants are now part of everyday lessons (Bennett, 2024; Holmes et al., 2022; Luckin et al., 2016). These technologies promise to adjust lessons to each learner's needs, lighten routine jobs such as grading or attendance, and give quick feedback to teachers and students alike (U.S. Department of Education, 2024; Vieriu, 2025).

The speed of this change has sparked a basic question: can education remain a human-centred, relationship-driven practice when so much is delegated to algorithms? Teaching has never been only about handing over information. At its best it grows out of trust, empathy and the responsibility to help every learner realise their potential (Cohen & Strayer, 2016; Jennings & Greenberg, 2009).

A large body of work shows that teachers' empathy—the ability to notice and respond sensitively to students' feelings—has real effects on motivation, achievement, classroom climate and well-being (Immordino-Yang & Damasio, 2007; Jamaluddin & Mokhtar, 2025). As AI spreads through classrooms, many researchers worry about whether it will reinforce these human strengths or gradually weaken them (Martin, 2025; Williams, 2024).

This paper takes up that concern by looking at AI through the lens of Emotional-Intelligence (EI) theory. EI, with its four components—self-awareness, self-regulation, social awareness and relationship-management—offers a practical way to examine how new technologies shape the emotional and relational life of teaching and learning. Framing the review in this way also clarifies how studies were selected and how their findings were read.

Research Questions
This review addresses three guiding questions:
1. How can compassionate and ethically grounded pedagogy be implemented when AI technologies are present in classrooms?
2. What are the benefits and unintended consequences of AI-driven personalization and automation for students, teachers, and classroom relationships?
3. In what ways can educators, designers, and policymakers collaborate to ensure that AI strengthens rather than weakens the human relationships that are central to learning?

Article Structure and Contribution
The rest of the paper unfolds as follows. Section 2 describes the review's methodology, outlining the databases consulted, the search strategy, and the inclusion criteria shaped by the EI framework. Section 3 summarises what the literature shows about both the benefits and the drawbacks of AI in education. Section 4 looks more closely at empathy as a core pedagogical value, while Section 5 turns to the main ethical challenges raised using AI. Section 6 discusses how Emotional-Intelligence principles can inform the way AI is introduced into classrooms, and Section 7 considers the limits of so-called "artificial empathy." Sections 8 and 9 present policy and teacher-development recommendations as well as priorities for future research. Finally, Section 10 concludes by reflecting on the theoretical and practical implications of keeping education human-centred in a digital age.

By using EI as its guiding framework, the paper offers both a transparent, theory-driven reading of the current evidence and a set of practical ideas for developing and adopting AI in ways that strengthen—rather than displace—the empathic foundations of good teaching.

METHODOLOGY

This study used a systematic narrative review to explore how artificial-intelligence (AI) tools in education intersect with empathy and the four dimensions of Emotional-Intelligence (EI). A narrative approach was chosen because it combines the rigour of systematic searching and screening with the flexibility needed to interpret questions that sit at the crossroads of technology, pedagogy and socio-emotional development (Greenhalgh et al., 2018).

The search covered the period January 2016 to March 2025 and drew on five major databases that together reflect both educational and technical scholarship: Scopus, Web of Science, ERIC, IEEE Xplore, and Google Scholar for recent grey-literature and policy reports. To capture the full range of relevant work, we built search strings around four thematic clusters:

1. AI and educational-technology terms such as "*artificial intelligence*", "*machine learning*", "*adaptive learning*", "*predictive analytics*" (Holmes et al., 2022; Luckin et al., 2016);
2. Empathy and socio-emotional learning terms such as *"empathy," "emotional intelligence," "affective computing"* (Goleman, 1995; Immordino-Yang & Damasio, 2007; Shah, 2022).
3. Educational-context terms including *"education," "teaching," "pedagogy"* (Jennings & Greenberg, 2009); and
4. Ethics and governance terms such as *"ethics," "bias," "privacy," "human-centred"* (Floridi et al., 2018; Williamson & Piattoeva, 2022; UNESCO, 2025).

The syntax of the strings was adjusted for each database, and searches were limited to publications in English.

The combined search produced 340 records. We screened titles and abstracts to exclude purely technical proofs-of-concept with no educational application, studies unrelated to human factors or socio-emotional outcomes, and duplicates. This first screening left 127 articles for full-text review.

To be included in the final sample, studies had to:
- focus on AI in K-12, higher-education, or teacher-training contexts;
- address at least one of EI's four dimensions—self-awareness, self-regulation, social awareness, or relationship-management (Goleman, 1995); and
- appear in peer-reviewed journals, scholarly books, or recognised institutional reports (for example, U.S. Department of Education, 2024; World Economic Forum, 2025).

Applying these criteria, we retained 68 studies for analysis. Each was coded against the EI dimensions:
- Self-awareness: impacts on students' or teachers' recognition of their own emotions or learning needs (Immordino-Yang & Damasio, 2007);
- Self-regulation: effects on emotional control, persistence or stress management (Jennings & Greenberg, 2009);
- Social awareness: attention to recognising or supporting others' feelings, fairness and equity (Cohen & Strayer, 2016);
- Relationship-management: influence on the quality of teacher–student and peer interaction (Jamaluddin & Mokhtar, 2025).

We also coded each study by type of AI application -for example, adaptive learning (Liu & Li, 2024), predictive analytics (Vistorte et al., 2024), affective computing (AlZu'bi et al., 2022), or

administrative automation (Bennett, 2024)- and by the main ethical concern discussed, such as bias, privacy, transparency or autonomy (Floridi et al., 2018; Williams, 2024).

For the synthesis, we used a thematic approach. Rather than listing studies one by one, we compared how different AI applications either supported or conflicted with the socio-emotional capacities that EI theory identifies as central to effective teaching and equitable learning. This process brought out both areas of alignment -for instance, evidence that adaptive feedback can improve students' self-awareness- and areas of tension, such as the trade-off between efficiency-driven automation and the relational trust nurtured by human teachers (Holmes et al., 2022; Shah, 2022).

By keeping EI as the organising framework throughout, the analysis remained anchored in human-centred pedagogical values while examining the rapid growth of AI innovations.

TABLE 1
Overview of Literature Selection Process

Stage of Review	Number of Records
Initial search across all databases	340
After title & abstract screening	127
Full-text articles assessed for eligibility	127
Studies meeting all inclusion criteria	68

Note: Data represent total records included in the systematic narrative review (January 2016 – March 2025)

AI IN EDUCATION: ADVANTAGES AND LIMITATIONS

Over the last ten years, artificial-intelligence (AI) technologies have shifted from being useful add-ons to being part of the very machinery of instruction. They affect the way lessons are structured, graded and even felt by students (Bennett, 2024; Holmes et al., 2022; Luckin et al., 2016). In the light of Emotional-Intelligence (EI) theory, these products have two faces: one, on the one hand, real opportunities to enhance social and emotional classroom life; and on the other, risks that may damage it.

It is quite possibly the biggest advantage that has been gained from personalised learning. Adaptive systems track what each pupil already has, how they respond to activity and how they acquire knowledge over time. They tailor lessons as a result. This kind of feedback helps the majority of students determine both their strengths and areas that require more learning, which facilitates self-knowledge—a EI skill linked to persistence and realistic goal setting (Liu & Li, 2024; U.S. Department of Education, 2024). Studies consistently show increased participation and fewer student dropouts when the tools are used together with a teacher who is able to decipher the data and steer students (Holmes et al., 2022; Luckin et al., 2016).

Another self-evident advantage is the automation of routine tasks—marking, attendance taking, plagiarism checking or assignment issuing. In taking away this drudgery from the educators' shoulders, AI frees up educators to have more time for what cannot be automated: coaching, immediate feedback, and socio-emotional work in teaching. In this way, automation can support the relationship-management aspect of EI (Bennett, 2024; Martin, 2025). Those schools that have adopted such systems with leadership support commonly observe not only greater efficiency but also more effective teacher–student interactions.

Predictive analytics through AI introduce another level of support. By analyzing large volumes of learning-management data, these models can prompt educators when a student begins to tune out or fall behind, initiating timely intervention in the form of tutoring or counseling. This widens teachers' social awareness, enabling them to spot patterns of need

which might otherwise go unnoticed (Vistorte et al., 2024). When openly used in combination with complementary personal debate, these bits of information can prove effective within expansive and compassionate pedagogy.

AI multimodal and generative tools -e.g., writing supports, virtual labs or creative-art programs- can help students weather hard tasks piece by piece as well. When used in classroom reflective practices, they promote self-regulation, and spur creativity as well as exploration without diminishing the need for critical thinking (Martin, 2025; Tapp Jaksa & Margerum-Leys, 2024). Additionally, AI-based assistive technologies which include speech-to-text, captioning, real-time translation, or affect-responsive agents, have lowered the bar of providing equal access to students with disabilities or learning another language. These enhancements broaden social understanding across classrooms and extend the goals of Universal Design for Learning (Vieriu, 2025).

There are some cited actual risks and limits in literature. One that is seen repeatedly is algorithmic bias. Those models that learn from historical data can reproduce those historical disparities in the predictions they make, wrongly labeling some groups as "at risk" or constricting their learning pathway opportunities. This undermines both justice and authentic social awareness (Cios & Zapala, 2023; Floridi et al., 2018). It is seen from the United States and Europe that how automated course placement or grading provided unfair outcomes, which had to be corrected by human assessment subsequently (Williams, 2024).

Another concern is the transparency of advanced models. Deep-learning models are "black boxes" for the most part, leaving students and teachers unsure why a suggestion was made. This transparency can erode trust and even reduce self-reflection, as neither students nor teachers are fully capable of understanding and questioning the reason given by the system (Williams, 2024; Williamson & Piattoeva, 2022). Researchers advocate explainable-AI tools and keeping human-in-the-loop to ensure accountability.

Privacy and surveillance issues are also relevant. Most AI-based platforms are based on continuous data collection, including sometimes biometric or affective states such as eye gaze, facial expression or voice tone. As these inputs increase personalisation, the perception of being monitored might deter students from contributing freely and may clash with self-regulation (Floridi et al., 2018; U.S. Department of Education, 2024). Greater data-minimisation controls and transparent consent procedures are normally recommended.

A further risk is the loss of personal relationship. While AI can simulate empathy in words, it can never substitute for the moral judgment, intuition or cultural sophistication that real empathy involves. Overreliance on algorithmic answers has the potential to suppress the small, informal human exchanges—eye contact, humor, support—that form the basis of the relationship-management side of teaching (Holmes et al., 2022; Jamaluddin & Mokhtar, 2025; Shah, 2022). Studies indicate that students might value the utility of AI technology but continue to seek assurance and confidence from their instructors.

Finally, many teachers assert that they are still not ready to apply these technologies in a productive manner. Technical knowledge deficits and in embedding socio-emotional learning strategies lead to adoption being mismatched or poorly aligned with human-centered goals (Bennett, 2024; Vieriu, 2025). Lacking regular training and institutional support, AI can become a surface-level addition rather than a firmly embedded support.

Overall, the educational potential of AI depends more on how it is designed and used than on what technology can do. When guided by the four EI dimensions of self-awareness, self-regulation, social awareness and relationship-management, AI can augment teachers to accelerate learning. Implemented with disregard for transparency, privacy, fairness and teacher preparation, it can widen inequities while sabotaging the human relationships that successful education relies upon.

TABLE 2

Mapping of AI Applications to Emotional-Intelligence (EI) Dimensions

AI Application	EI Dimension(s) Supported	Key Educational Benefit
Adaptive / personalised learning	Self-awareness, Self-regulation	Tailors pacing and feedback, improving learner insight
Predictive analytics (at-risk alerts)	Social awareness	Flags early signs of disengagement for timely support
Administrative automation	Relationship-management	Frees teacher time for mentoring & socio-emotional care
Generative & creative-support tools	Self-regulation	Scaffolds complex tasks, supports creativity & persistence
Assistive tech for accessibility	Social awareness	Enables inclusive participation for students with disabilities or linguistic barriers

EMPATHY AS A PEDAGOGICAL VALUE

Empathy—the capacity to sense, comprehend, and act meaningfully in response to the feelings and perceptions of others—has been described as being at the center of effective teaching and learning. Empathy is not theorized within educational psychology as a "soft" nurturing skill but as an essential relationship ability that affects pupil motivation, engagement, and flourishing (Cohen & Strayer, 2016; Jennings & Greenberg, 2009). In Emotional Intelligence (EI), empathy covers social awareness -perception of other people's feelings and relationship management- the ability to respond in a manner that creates trust, rapport, and a sense of belonging (Goleman, 1995).

There is abundant evidence showing that teaching practices based on empathy create psychological safety and feeling of belonging in the classroom. Students whose teachers they judge to be sympathetic have been seen to have better academic performance, better motivation, and better social relationships (Immordino-Yang & Damasio, 2007; Jamaluddin & Mokhtar, 2025). Such classrooms create collaborative learning cultures where mistakes are viewed as learning moments, linguistic and cultural diversity is valued, and misbehaviors are addressed by talking them over rather than through discipline (García et al., 2022; Jennings & Greenberg, 2009).

Empathy is also engaged in school moral and ethical practice. Empathy allows teachers to respond situationally in dealing with competing requirements, conflict intervention, and dealing with disparities. Empathy is used to enhance self-awareness from an EI perspective by prompting teachers to reflect on their own feelings and biases and thus offering more fair and culturally sensitive teaching (Cohen & Strayer, 2016; García et al., 2022).

These most strongly correlated with empathy are the skills developed in socio-emotional learning (SEL) models. SEL models emphasize self-awareness, self-regulation, social awareness, relationship skills, and responsible decision-making—domains with direct overlap with EI theory (Immordino-Yang & Damasio, 2007). Controlled trials show SEL interventions increase students' academic performance, classroom behavior, and prosocial behavior, reducing disciplinary referrals and symptoms of anxiety or depression (Holmes et al., 2022; Jennings & Greenberg, 2009;). They highlight the practical use of empathic teaching to intellectual and socio-emotional development.

Yet with classroom discourse being more and more mediated by digital technology, concerns about empathic loss in relation have been voiced. Online and hybrid learning spaces forgo bodily presence otherwise enhancing empathic resonance through tone, facial expression,

and gaze (Derakhshan et al., 2025; Shah, 2022). Even as new forms of affective computing can detect markers of frustration or disengagement through facial or voice recognition (AlZu'bi et al., 2022), computational indicators are coarse estimations of genuine human understanding. AI may assist in providing informational social awareness—i.e., alerting teachers to a student's possible distress—but it cannot substitute for genuine relationship management involving moral judgment, caring intention, and conversationally inflected by context (Holmes et al., 2022; Shah, 2022).

The studies reveal that excessive reliance on pre-scripted questions or pre-typed empathic comments has the potential to de-personalize classroom interaction and even restrict students' own empathic learning through fewer opportunities for genuine interpersonal interaction (Holmes et al., 2022; Jamaluddin & Mokhtar, 2025). Evidence lends support to the argument that technology needs to be defined and used as a facilitator to, but not in place of, human empathy. Practically speaking, AI warnings of student affect should be used as triggers for human follow-up in the moment but not as independent interventions.

Overall, empathy is a pedagogical spark plug, a moral compass, and an equity engine as an educational practice. Its existence is predicated on continuous human relationships, self-reflection teaching, and positive classroom spaces, things that cannot be fully mechanized. Attunement to such relational foundations is needed in order to critically evaluate if new technology maintains or destroys the humanistic intentions of education.

CHALLENGES AND ETHICAL DILEMMAS

With AI spreading across classrooms, pedagogical and ethical issues that outweigh technical resolutions arise, in contradiction to core values of privacy, equity, relational trust, and learning integrity. The Emotional Intelligence (EI) model shows how such tensions destroy the emotional and relational underpinnings of deep education.

Surveillance and data privacy are continuing concerns: adaptive systems gather huge amounts of behaviour and even biometric data—eye-tracking, face, voice—to offer tailored feedback (Floridi et al., 2018; U.S. Department of Education, 2024). Continuous, invisible tracking may deter true participation, hindering self-regulation by students, while millions of families remain unaware data are in use or remain at risk of losses (Williams, 2024).

Algorithmic bias distorts social awareness as well, since prediction models inherit differences—misidentifying groups as "at-risk" or confirming biases (Cios & Zapala, 2023). Human oversight has reversed many unfair, algorithm-based rulings (Williams, 2024).

Depersonalization of the learning experience is yet another risk: AI can present material but lacks moral perception and actual empathy (Holmes et al., 2022; Shah, 2022). Sole reliance on AI speech might replace the tact and honesty of students' favorite human teachers (Jamaluddin & Mokhtar, 2025).

Transparency in deep-learning models undermines self-knowledge and trust since students and teachers cannot understand or challenge AI-suggested responses (Williamson & Piattoeva, 2022). Researchers recommend explainable-AI interfaces and human-in-the-loop governance in order to enable accountability.

In the face of international standards like UNESCO's Recommendation on the Ethics of AI (2025), enforcement—bias audits, privacy-by-design, opt-out rights—is uneven. The literature emphasizes that AI risk is less technological and more about the design, deployment, and regulation of AI. Human-centered, value-based practice is required in order to protect dignity, equity, empathy, and the socio-emotional competencies—self-awareness, self-regulation, social awareness, relationship-management—necessary for learning and democratic participation.

FIGURE 1
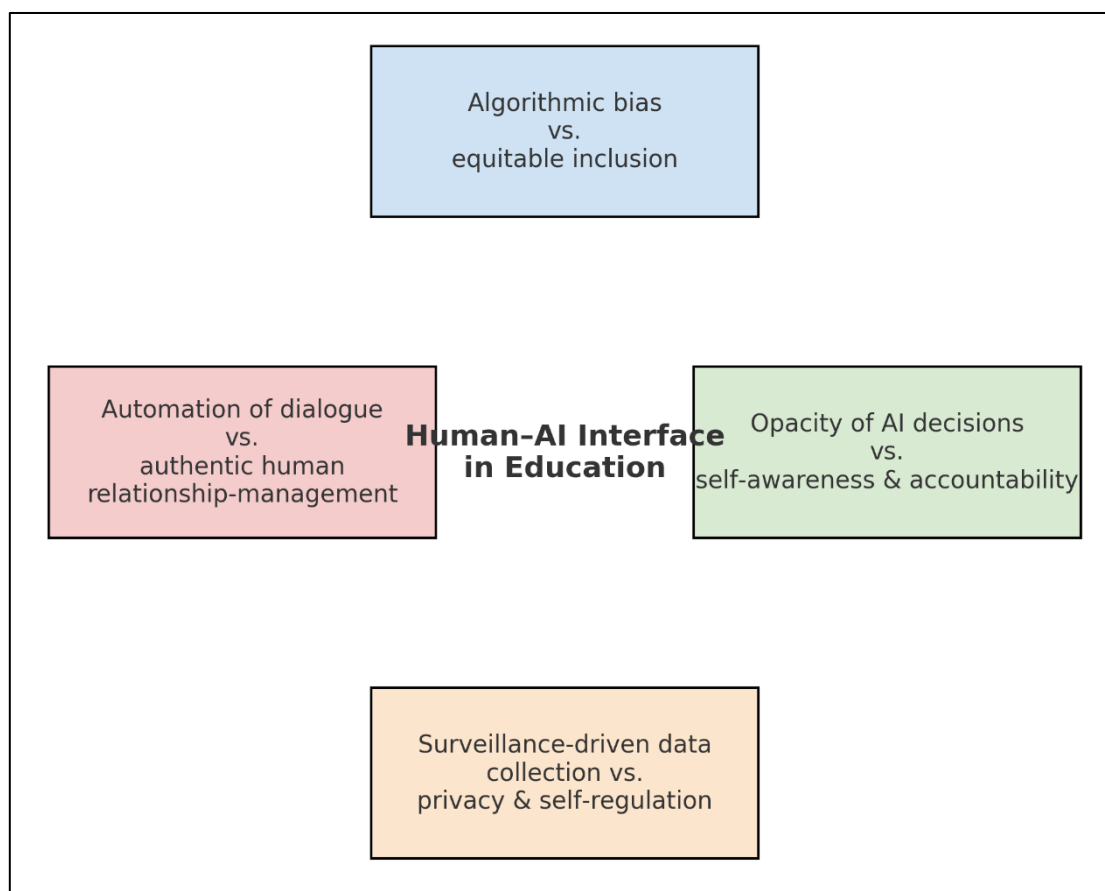
Ethical Tensions at the Human–AI Interface in Education
A conceptual diagram illustrating four principal ethical tensions that emerge when AI is adopted in learning environments: (1) Algorithmic bias vs. equitable inclusion; (2) Opacity of AI decisions vs. self-awareness and accountability; (3) Surveillance-driven data collection vs. privacy and self-regulation; (4) Automation of dialogue vs. authentic human relationship-management.

THEORETICAL FRAMEWORK: EMOTIONAL INTELLIGENCE AND EMPATHY IN EDUCATION

Understanding artificial-intelligence-aided learning would necessitate an explicit theory that would be able to deal with both cognitive and relational processes. The Emotional Intelligence (EI) theory, first popularized by Goleman (1995) and then extended to the educational context by Jennings and Greenberg (2009), would provide such a theory. EI is the ability to recognize, understand, regulate, and apply effectively one's own and others' feelings in ways that enhance good reasoning, sound decision-making, and healthy relations. Thirty years of research link teachers' EI skills to more empathic classrooms, more motivated students, and improved academic achievement (Cohen & Strayer, 2016; Immordino-Yang & Damasio, 2007).

The model suggests four elements of specific application to education: self-awareness, knowledge of one's own emotions and their impact on others; self-regulation, mastery of feelings under stress; social awareness, awareness of and ability to read the emotions and perspectives of others; and relationship-management, the skills of rapport-building and conflict management through empathy, communication, and cooperation (Goleman, 1995). These

capacities support teachers' capacity to establish psychological safety, model emotional stability, and support prosocial classroom behavior (Jennings & Greenberg, 2009).

EI is used in teaching in several empathy-based approaches. Reflective pedagogy encourages teachers to examine their own assumptions and emotional responses, enhancing self-awareness and enabling building professional judgment. Culturally responsive teaching is guided by the students' lived experiences as a source of learning, being socially aware in understanding how cultural backgrounds shape emotional expression and learning needs (García et al., 2022). Relational teaching recognizes that learning is a social process; it places human connection at the core of teaching efficacy, teaching-management relationship and cultivating inclusivity, especially for marginalized learners (Holmes et al., 2022; Jamaluddin & Mokhtar, 2025).

Using artificial intelligence in such a framework has to be carried out with highest prudence. AI lacks genuine affective capacity, ethical judgment, and contextual sagacity, but well-designed and managed, it can indirectly augment human emotional intelligence. For example, learning-analytics dashboards and future affective computing systems can recognize patterns of disengagement, frustration, or anxiety among students. Rather than attempting to emulate empathy, that is, these kinds of technology can make teachers more socially sensitive by giving them timely information to enable tactful human action (Luckin et al., 2016; Shah, 2022). Similarly, by automating routine tasks such as marking and roll call, AI has the potential to free teachers to devote more energy and time to mentoring, advising, and relational aspects of practice—thereby solidifying relationship-management (Bennett, 2024; Martin, 2025).

The model also emphasizes that effective human-AI collaboration is dependent on well-defined, human-oriented design choices. Socio-emotional interventions driven by AI need to remain in human control; use of data should be coordinated with privacy and ethical safeguards; and algorithmic recommendations need to be explainable in a way that preserves students' and teachers' self-knowledge and agency (Floridi et al., 2018; Williamson & Piattoeva, 2022). Teacher professional training that equips instructors with technical AI expertise alongside EI-based pedagogy is also vital to ensure digital technologies supplement and do not displace empathic practice (Bennett, 2024; Vieriu, 2025).

The key argument developed from the theoretical stance above is that AI would be conceived as not a substitute for human empathy but as a likely booster of empathy if placed in EI-based pedagogies. Properly regulated, AI has the potential to assist in building inclusive, fair learning environments by augmenting teachers' situational awareness, freeing them up to do relational work, and offering personalized support respectful of all learners' dignity. Lacking such an ethical-pedagogical basis, however, technological uptake carries the threat of baking mechanistic assumptions about teaching into the very fabric of educational practice and destabilizing the social relations that good teaching depends on.

THE LIMITS OF ARTIFICIAL EMPATHY

Subsequent advances in affective computing have produced systems claiming to feel or respond to human emotions using facial expression analysis, tone of voice, gesture, or sentiment analysis in text. These technologies are increasingly finding their way into learning technologies—ranging from virtual tutoring avatars to classroom analytics in real time—intended to make digital learning environments more sensitive (AlZu'bi et al., 2022; Shah, 2022). These developments have raised the question of whether it is possible for machines to ever show some forms of empathy that human teachers do.

Literature continuously underscores the fact that artificial empathy isn't real empathy. While algorithms may recognize statistical correlations with specific affective states, they lack

conscious experience, moral understanding, or contextual discrimination—capacities that define authentic human empathy (Holmes et al., 2022; Shah, 2022;). An AI teacher can, for example, pick up on frustration signals through micro-expressions and generate a learned statement such as "I see that this problem is hard - breathe slowly and let's do it again". Although such feedback is recognized to be nurturing, it is actually a constructed output based on probability distributions rather than from caring or ethical purposes.

From an Emotional Intelligence (EI) perspective, such a distinction is critical. AI-mediated identification supports informational social awareness -it may indicate that a student appears disengaged or stressed- but is not capable of relationship-management, which includes the ability to weigh context, communicate genuine concern, and adjust response with moral tact (Goleman, 1995; Jennings & Greenberg, 2009). True empathic interaction is dependent upon reflective self-awareness of the teacher, ethical thinking, and culturally responsive reading of emotional cues—qualities unmachinable by an algorithmic process.

Also, greater use of simulated empathic interfaces in schools carries special risks. Scholars warn that reliance on machine-generated empathic scripts has the likelihood to de-personalize classroom interactions, replacing spontaneous human connection with script-like response (Holmes et al., 2022; Jamaluddin & Mokhtar, 2025). Students consistently exposed to AI-mediated "empathy" will likely become more unable to distinguish true relational warmth from algorithmic mimicry, an effect that might unwittingly suppress their own empathic abilities in the long run (Derakhshan et al., 2025).

The issue also intersects with equity and cultural responsiveness. AI models trained primarily on dominant linguistic or cultural group data can misinterpret affective expressions of students from diverse communities and react in an inappropriate or unjust manner. Misrecognition decouples social sensitivity and relationship-management and can reinscribe stereotypes or render already vulnerable learners invisible (Cios & Zapala, 2023; García et al., 2022).

These limitations highlight that while affective technologies may signal teachers by offering ancillary behavioural data, they should not be considered as replacements for human empathic engagement. The unique pedagogical potential of empathy is contained in its moral intentionality and to create genuine trust, solidarity, and inclusion—qualities no existing AI can replicate. Thus, best practice requires that any affect-sensitive system in education be built as an assistive instrument: it should be deployed as a cue for initial human follow-up, never as a separate agent of care.

RECOMMENDATIONS FOR POLICY AND PROFESSIONAL DEVELOPMENT

If we consider ethical AI deployment into education, alignment must be done at the policy level, institutional level, professional level, and technology design level. Yet, unaligned AI will deepen the injustices, erode privacy, and stain the very beating empathetic heart of teaching (Floridi et al., 2018; UNESCO, 2025; U.S. Department of Education, 2024). Nations must install an ethical and regulatory framework for information security, including transparency, auditing for bias, and technology that is emotionally intrusive to be refused by teachers and students alike, based partly on UNESCO's Recommendation on the Ethics of AI (2025), as long as equity is respected via culture-responsive and affordable technological infrastructure to meet the challenge of bridging the digital divide (World Economic Forum, 2025). A purely inclusive ethics committee, ideally established at the institutional level in schools and universities, should scrutinize data-use policies, allow for grievance procedures, and envisage balanced expenses applied to technologies and human services such as counseling and socio-emotional learning (Williamson & Piattoeva, 2022). Most importantly, teacher training must be put in place before

anything else: pre-service training should include EI and AI literacy so that teachers can make sense of algorithmic output, data confidentiality, and ways of applying empathic teaching approaches in hybrid settings. Systematic development thus has to include self-awareness, cross-cultural awareness, and interpersonal management skills (Bennett, 2024; Jamaluddin & Mokhtar, 2025; Jennings & Greenberg, 2009; Vieriu, 2025). EdTech and developer communities must remain human-focused with the involvement of teachers and students and be designed to be transparent, explainable, and free of system bias (Floridi et al., 2018; Shah, 2022) based on impact assessments on trust, inclusivity, and classroom culture. All these will assure AI becoming a partner for building the dignity and empathy of human beings and equitable access to learning.

FUTURE DIRECTIONS AND RESEARCH GAPS

While AI use in education has grown rapidly, the research has been fractured and remains largely focused on short-term efficiency gains, leaving long-term hikes in cognition, emotional, and social impacts vastly unexplored (Holmes et al., 2022; Vistorte et al., 2024). The time is ripe for tying together technological innovation with humanistic and ethical concerns. An immediate priority is longitudinal research tracing how chronic exposure to AI-mediated learning systems impacts students' empathy, self-regulation, autonomy, and social relationships. Adaptive systems tend to better short-term performance while, in the longer term, knowledge is scarce about how their use may impact resilience or true empathy during years of schooling (Immordino-Yang & Damasio, 2007; Jamaluddin & Mokhtar, 2025). A mixed-methods design using validated instruments of EI and SEL along with the lived experiences of students would clarify whether AI-assisted interventions develop socio-emotional abilities of students that are transferable and remain for years. Equally urgent is cross-cultural research since almost all data has arisen from high-income Western contexts (García et al., 2022; Zawacki-Richter et al., 2019). Comparative studies must inquire as to whether AI properly interprets culturally diverse expressions of emotion, how trust varies across cultures, and what inequities arise in low-resource settings—thus informing algorithms and policies responsive to culture. Methodological innovation is required in these lines of inquiry: existing instruments hardly measure the reality of emotional engagement or the ambience of relational interactions in hybrid classrooms. New ones are needed to assess, in digital environments, teacher EI, student empathy toward AI tutors, and trust in human-AI interactions (Williams, 2024; Williamson & Piattoeva, 2022). This, in turn, necessitates participatory, interdisciplinary research that involves students, teachers, and parents to develop ethical guidelines (UNESCO, 2025) and engages disciplines such as neuroscience, ethics, and educational psychology to investigate issues of attention, social cognition, and authentic empathy (Floridi et al., 2018; Shah, 2022). The furtherance of a sturdy, inclusive evidence base will redirect attention from what AI can do to what AI should do to promote fair, empathic, and emotionally intelligent education.

CONCLUSION

This analysis has examined the intersection of the fast expansion of artificial intelligence (AI) in learning with the affective and relational dimensions of learning. Informed by theory of Emotional Intelligence (EI) (Goleman, 1995), the analysis discerns both the promise of AI such as tailored learning supporting self-awareness (Luckin et al., 2016; Liu & Li, 2024), predictive analytics improving social awareness of at-risk learners (Vistorte et al., 2024), and automation

freeing teachers to be more involved in more meaningful relationship-management (Bennett, 2024)—and its risk, including algorithmic bias (Cios & Zapala, 2023), data-driven surveillance undermining self-regulation (Williams, 2024), and risk of depersonalizing the teacher–student relationship (Jamaluddin & Mokhtar, 2025; Shah, 2022).

One of the most prominent findings is that AI cannot replicate true empathy: it can provide data on emotional states without the ethical reasoning and contextual sensitivity that enable empathy to alter teaching (Holmes et al., 2022; Immordino-Yang & Damasio, 2007). Literature thus explains that integration of AI needs to be human-oriented (Floridi et al., 2018; Shah, 2022), robust ethical regulation systems (UNESCO, 2025; U.S. Department of Education, 2024), and professional development that equips educators with the ability to utilize AI to enhance rather than detract from empathy-based education (Jennings & Greenberg, 2009; Vieriu, 2025).

Methodologically, this review demonstrates the value of applying EI's four dimensions -self-awareness, self-regulation, social awareness, and relationship-management- as an analytical lens for assessing the social-emotional effects of educational technology. By coding 68 studies across these dimensions, the synthesis revealed recurring tensions: for example, while adaptive learning can personalise feedback and support student self-awareness, opaque algorithmic recommendations may reduce teachers' and students' ability to reflect on or challenge the basis of these outputs (Williamson & Piattoeva, 2022).

Practice implications are clear. Prioritization of open algorithms, privacy-by-design, routine audits for bias, and equitable access to AI-enabled resources need to happen (World Economic Forum, 2025). Ethics committees need to be established in institutions and investment in technology balanced against human-oriented services such as counseling and socio-emotional learning assistance. Teacher training must integrate both AI literacy and EI-focused pedagogies to prepare teachers to read algorithmic feedback and maintain classroom trust and inclusion (Jamaluddin & Mokhtar, 2025). Finally, designers must design tools that respect relational integrity, with educators and students as involved stakeholders in the design process to ensure AI supports rather than erodes human connection.

Longitudinal and cross-cultural studies will be necessary in the future to gain insight into the long-term effects of protracted use of AI on empathy, resilience, and social competencies (García et al., 2022; Zawacki-Richter et al., 2019). Comparative data across different contexts will ensure that educational AI evolves in a way that reinforces, rather than degrades, the humanistic mission of education.

Lastly, the literature points out that the benefits of AI in education come not from technology itself but from the way it is performed, regulated, and developed by teachers and institutions. Upholding dignity, fairness, and empathy values is vital if AI is to be a genuine ally to education's relational and democratic values.

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