

Artificial Intelligence and Conflict Management in School Context: Challenges, Opportunities, and Practical Applications

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Abstract

The growing integration of digital technologies into teenagers' daily lives has profoundly transformed social interaction dynamics in school settings, giving rise to new forms of conflict and intensifying existing challenges. This study adopts a narrative review approach, based on a purposive selection of interdisciplinary literature, to construct a conceptual synthesis of conflict management in school contexts. The widespread use of mobile devices, social networks, and artificial intelligence-based systems contributes to the emergence of hybrid conflicts that develop simultaneously in online and face-to-face contexts. Hybrid conflicts are understood as conflict dynamics that emerge and evolve across both online and face-to-face contexts, with interactions in digital environments influencing and amplifying tensions in physical school settings, and vice versa. In this scenario, traditional conflict management models prove insufficient, requiring the integration of approaches that articulate socioemotional competencies and emerging technologies. The study analyses the role of artificial intelligence in understanding, preventing, and mediating school conflicts. Building on empirical evidence that underscores the importance of socioemotional competencies in behavior regulation and the promotion of constructive conflict resolution strategies, it discusses how artificial intelligence systems can operationalize processes such as conflict pattern detection, emotion analysis, and support for interpersonal mediation. Practical classroom application examples are presented, including non-violent communication-based mediating chatbots, language analysis systems for early detection of conflict escalation, and immersive environments for socioemotional skills training. Additionally, practical implications and ethical dilemmas associated with the use of artificial intelligence in educational contexts are discussed, with special

attention to privacy, algorithmic transparency, and the central role of human relationships. It is concluded that artificial intelligence, when used ethically and integrated with student-centered pedagogical approaches, constitutes a promising tool for promoting more positive, collaborative, and emotionally regulated school environments, complementing, without replacing, the role of human interactions in conflict management.

Keywords

Artificial Intelligence, Conflict Management, Emotional Intelligence, Classroom Psychosocial Environment, Digital Conflicts, School Context

1. Introduction

Conflict management in school settings constitutes one of the most persistent and complex challenges of contemporary educational societies. Particularly in secondary education, the intensification of social interactions, associated with academic demands and the developmental challenges of adolescence, tends to make interpersonal conflicts more frequent and complex, affecting school climate, individual well-being, and pedagogical functioning (Johnson & Johnson, 2017; Stevahn et al., 2002).

Although conflict is inherent in social life and can play a constructive role when properly managed, its dysfunctional expression is associated with aggressive behavior, social exclusion, and deterioration of interpersonal relationships (Deutsch et al., 2011; Johnson & Johnson, 2017; Zhu et al., 2025).

In recent decades, this scenario has been profoundly transformed by the rapid evolution of digital technologies. The intensive use of devices such as smartphones, tablets, and computers, combined with the omnipresence of social networks and online communication platforms, has structurally altered interaction dynamics among students (OECD, 2019).

The boundaries between school space and virtual space have become progressively more blurred, generating conflicts that extend beyond the classroom and persist in digital environments. Phenomena such as cyberbullying, public exposure of disagreements, and amplification of negative interactions illustrate this reality, characterized by faster conflict escalation and greater challenges in their regulation (Wang & Degol, 2016; Kang et al., 2022). These studies highlight that the interaction between physical and digital contexts influences students' social behavior, potentially intensifying interpersonal tensions and affecting the classroom psychosocial climate, underscoring the need for conflict management strategies that integrate socioemotional competencies and technological tools.

In parallel, the debate around mobile device use in school settings has intensified, particularly regarding adolescents under 16. While some perspectives advocate limiting or prohibiting mobile phone use to reduce distractions and prevent conflicts, others emphasize the importance of promoting self-regulation compe-

tencies and responsible technology use (CASEL, 2023). This debate reveals a central tension in contemporary societies: the need to balance the educational potential of technologies with risks associated with their unregulated use.

In this context, research has highlighted the role of socioemotional competencies, particularly emotional intelligence (EI), as a central factor in promoting adaptive conflict resolution strategies (Al-Taie & Abdulhussein, 2025; Valente & Lourenço, 2022). EI, understood as the ability to perceive, understand, use, and regulate emotions (Mayer et al., 2016), has been consistently associated with better social competencies, greater empathy, and a greater propensity to use collaborative strategies in peer conflict management (Schonert-Reichl, 2017; Schutte et al., 2001).

In educational settings, students with higher EI levels demonstrate greater self-regulation capacity, better interpretation of others' intentions, and greater effectiveness in constructively resolving tension situations (Denham & Bassett, 2019). Despite the robustness of these contributions, a recurring limitation in the literature is the predominance of approaches that focus exclusively on individual variables, neglecting the social and technological contexts in which these competencies manifest.

Contemporary approaches emphasize that student behavior results from dynamic interaction between individual characteristics and environmental contexts (Bronfenbrenner, 1979; Rimm-Kaufman et al., 2023). In this framework, the classroom psychosocial environment is of particular relevance, understood as students' perceptions of the quality of interpersonal relationships, social support, sense of belonging, and norms of coexistence within the classroom context (Fraser, 2014). Empirical evidence demonstrates that positive psychosocial environments are associated with greater cooperation, better self-regulation, and lower incidence of disruptive behaviors (Jennings & Greenberg, 2009; Wang & Degol, 2016).

At this point, artificial intelligence (AI) emerges as an increasingly relevant area in education. Recent advances in natural language processing, sentiment analysis, and adaptive systems have opened new possibilities for understanding and managing social interactions in real time (Pacheco et al., 2025; Zhang et al., 2025). In line with interdisciplinary approaches that integrate cognitive science and computational intelligence, AI enables the operationalization of complex processes such as conflict pattern detection, emotional state analysis, and support for interpersonal mediation in educational contexts (Zhang et al., 2025). Recent studies explore how AI can personalize learning, support transformative competency development, and integrate socioemotional strategies in school settings, promoting collaborative and emotionally regulated environments (Lourenço & Valente, 2026a, 2026b). These systems offer adaptive and personalized support, helping promote a more positive, collaborative, and emotionally regulated classroom environment, complementing, without replacing, essential human interactions in conflict management (Pacheco et al., 2025).

However, integrating AI into conflict management in school settings raises crit-

ical ethical, pedagogical, and social issues. Using algorithms to monitor interactions, analyze emotions, or mediate conflicts entails risks to privacy, transparency, technological dependence, and the potential dehumanization of educational relationships (OECD, 2019; Zhang et al., 2025). Additionally, automated systems may reproduce cultural or social biases, reinforcing inequalities if not carefully designed and evaluated (Pacheco et al., 2025).

These challenges require a balanced approach that recognizes the potential of AI tools to support self-regulation, empathy, and collaborative conflict resolution, without replacing the central role of teachers and human mediators in building a safe and inclusive school environment. The literature suggests that ethical AI implementation in educational settings must consider principles of informed consent, algorithmic transparency, and continuous monitoring of the impact on interpersonal relationships and the classroom psychosocial climate (OECD, 2019; Zhang et al., 2025).

Given this framework, this article aims to analyze how AI can contribute to understanding, preventing, and managing conflicts in school settings, articulating contributions from educational psychology, EI, and cognitive sciences. It specifically explores how AI-based technologies can complement traditional approaches, thereby promoting more collaborative, regulated, and inclusive learning environments.

To this end, the article is structured in four parts. After this introduction, the second section analyses conflict transformations in the digital era, highlighting the emerging main challenges. The third section explores the role of AI in conflict management in school settings, presenting concrete application examples. Finally, the fourth section discusses practical implications, ethical dilemmas, and presents the study's main conclusions. Although the discussion is primarily oriented toward lower and upper secondary education contexts, particularly students under the age of 16, the conceptual framework proposed may be adapted to different educational settings, taking into account institutional and cultural variations. This article adopts a narrative, conceptually oriented approach, aiming to provide an integrative discussion supported by existing literature rather than presenting original empirical data.

Nature of the Study and Literature Selection Criteria

This article is developed as a narrative review with a conceptual and integrative orientation (Snyder, 2019). Rather than following a systematic protocol with exhaustive inclusion and exclusion criteria, the study adopts a purposive and theoretically driven selection of literature, aiming to articulate key contributions from multiple fields relevant to the research problem.

The literature selection was guided by three main criteria: i) theoretical and empirical relevance to conflict management in school contexts; ii) contributions to the understanding of socioemotional competencies, particularly emotional intelligence; and iii) recent developments in AI applied to education and social in-

teraction. Priority was given to peer-reviewed articles, systematic reviews, and recent publications (especially from the last decade), complemented by seminal works that provide foundational theoretical frameworks.

This approach allows for an interdisciplinary synthesis that integrates educational psychology, cognitive sciences, and AI, providing a comprehensive and conceptually grounded perspective on emerging challenges and opportunities in school conflict management.

2. Emerging Conflicts with Technological Evolution

The rapid integration of digital technologies into schools' daily life has brought new types of conflicts that interact in complex ways with interpersonal dynamics and students' socioemotional development. These emerging conflicts not only challenge traditional pedagogical practices but also require a review of conflict management models, integrating socioemotional competencies and technological tools that are adapted to contemporary realities.

2.1. Types of Digital Conflicts

2.1.1. Distraction versus Autonomy

The intensive use of mobile devices, tablets, and computers during class causes constant interruptions that interfere with attention and learning (Beland & Murphy, 2016; Rosen et al., 2013), with recent studies demonstrating that distraction associated with mobile device multitasking has negative effects on performance and immediate information retention (Amez & Baert, 2020; Amez et al., 2021; Flanigan & Titsworth, 2020). Longitudinal studies show that students who frequently switch between pedagogical activities and non-class-related use exhibit lower content retention levels and lower scores on standardized tests (Junco, 2015). This cognitive alteration, often associated with the phenomenon known as switch cost, reflects the efficiency loss that occurs each time attention is diverted to irrelevant activities.

On the other hand, adolescents value technological autonomy as a form of expression, creativity, and active participation, generating tension between self-regulation and pedagogical control (OECD, 2019). This tension can escalate into conflict when students perceive rigid rules as punitive and unfair, while teachers interpret inappropriate device use as disrespectful to class norms. Promoting socioemotional competencies and self-regulation in school settings has proven effective in reducing distraction behaviors. Programs that combine clear rules, emotional skills training, and self-reflection contribute to students' self-regulation and better engagement in pedagogical activities (Brackett et al., 2019; Coelho et al., 2023; Collie, 2020; Schonert-Reichl, 2017).

2.1.2. Cyberbullying and Hostility in Online Groups

Cyberbullying represents one of the most pernicious forms of technological conflict. The possibility of partial anonymity and rapid content dissemination increases the severity of emotional aggression, making it persistent and difficult to

manage (Corcoran et al., 2015; Wang & Ngai, 2020). In school contexts, group messaging platforms, closed forums, and social networks can amplify harmful social comparisons, with negative impacts on self-esteem, well-being, and even depression symptoms among adolescents (Le Blanc-Brillon, 2025).

In school contexts, digital hostility can be perceived as especially intense, as public exposure and repetition of negative content increase emotional impact and affect adolescents' psychological well-being, who recognize these experiences as forms of interpersonal violence in the online environment (Machado et al., 2024). Research indicates that adolescents with greater cognitive empathy and emotional regulation competencies show greater capacity to resolve or mitigate conflicts, including in digital contexts, suggesting that socioemotional competencies can significantly mediate online hostility management (Denham & Bassett, 2019; Machado et al., 2024).

2.1.3. Digital Inequality and Exclusion

Inequalities in access to technological devices and connectivity constitute an emerging form of educational conflict, as students with limited access face barriers to participating in digital activities and online collaboration, thereby reinforcing equity gaps and educational exclusion (Abdulkareem & Lennon, 2023; Assefa et al., 2025).

Digital exclusion conflicts can also arise when mandatory learning tools require online access outside school hours, creating tensions between families and schools over equitable access to educational resources, as inequalities in access to devices and connectivity affect participation in digital activities and academic performance (Ure-de-Oliveira & Bonilla-Algovia, 2025).

In general, digital conflicts do not occur in isolation but interact with other dimensions of the school experience, such as academic pressure, group relationships, and online social norms. This interaction results in a web of tensions that impacts both academic performance and students' mental health (Le Blanc-Brillon, 2025; Machado et al., 2024; Wang & Ngai, 2020).

2.2. Impacts of Conflicts on Learning and Interpersonal Relationships

Digital conflicts can significantly affect learning and interpersonal relationships within the school. Environments with frequent technology-related interruptions are associated with lower attention, cognitive dispersion, and reduced academic performance (Flanigan & Titsworth, 2020; Rosen et al., 2013). Additionally, problematic digital practices, including online conflicts, can impair participation in collaborative activities and negatively impact students' sense of belonging and emotional engagement (Machado et al., 2024).

EI emerges as a crucial mediating component in this scenario. Students with greater socioemotional competencies can manage negative emotions, interpret social cues, and adopt constructive strategies for resolving conflicts, even in complex digital environments (Aldrup et al., 2022; Valente & Lourenço, 2022). Socioemo-

tional learning (SEL) programs that incorporate emotion identification, empathy training, and practice of assertive communication strategies demonstrate reductions in disruptive behaviors and improvements in relational satisfaction in both digital and face-to-face contexts (Brackett et al., 2019; Coelho et al., 2023; Rimm-Kaufman et al., 2023).

On the other hand, the absence of emotional support and regulation skills can cause cycles of escalating conflict, in which small online provocations trigger intense emotional reactions, impairing collaborative capacity for resolution and creating barriers to meaningful learning (Al-Taie & Abdulhussein, 2025). From this perspective, EI development is not only beneficial for mitigating conflicts; it is essential for promoting positive relationships, academic engagement, and emotional resilience in the modern educational environment.

Additionally, digital conflicts can generate cognitive and motivational impacts. The constant switching between academic tasks and irrelevant digital stimuli, the so-called switch cost, requires additional cognitive efforts that reduce working memory efficiency and decrease knowledge retention capacity (Rosen et al., 2013; Junco 2015). These cognitive costs compound the emotional effects of online conflicts, creating a cumulative cycle that impairs academic performance in multiple ways.

The literature also shows that pedagogical interventions that combine conflict-resolution strategies grounded in EI with technological support, such as AI-mediated feedback or digital socioemotional learning modules, can promote lasting improvements in classroom climate, group cohesion, and academic outcomes (Pacheco et al., 2025). Integrative approaches using AI to personalize learning and promote socioemotional competencies have shown potential to optimize self-regulation, reduce digital conflicts, and support academic engagement (Lourenço & Valente, 2026a, 2026b). These findings highlight the importance of approaches that recognize the cognitive, emotional, and technological dimensions of emerging conflicts.

2.3. Traditional Conflict Management Approaches

Classic conflict management models, such as those by Kilmann & Thomas (1977) and Rahim (1983), distinguish among resolution styles, including competition, accommodation, compromise, avoidance, and collaboration. These models offer solid bases for understanding resolution behaviors but were designed for face-to-face and linear contexts, presenting limitations before fluid and multi-level digital conflicts (Deutsch et al., 2011; Johnson & Johnson, 2014).

While traditional approaches emphasize face-to-face communication and direct negotiation, digital conflicts demand responses that consider continuous time, multiple channels, and adaptive monitoring. For example, a disagreement in a chat group can persist for hours or days, crossing different interaction contexts, while the traditional mediator may not be present in real time to intervene.

Other approaches focused on the psychosocial environment, such as those sug-

gested by Rimm-Kaufman et al. (2023), emphasize fostering coexistence norms and supportive relationships, but often lack technological mechanisms to detect conflicts in real time or to offer feedback tailored to students' emotions.

AI emerges as a valuable complementary strategy in school conflict management. AI models can analyze language patterns, identify underlying emotions, and signal tension escalations, enabling earlier and more personalized pedagogical interventions (Pacheco et al., 2025; Zhang et al., 2025). These systems offer adaptive support and contribute to a more collaborative and emotionally regulated classroom environment, complementing, without replacing, essential human interactions.

However, AI implementation must be approached with caution, considering privacy, algorithmic bias, and transparency issues. The ethical use of digital systems requires clear governance, informed consent, and continuous evaluation of the impact on the educational climate to prevent unintended consequences and reinforce trust among teachers, students, and families (OECD, 2019).

Thus, integrating classic conflict management approaches with digital tools and AI enables a hybrid strategy that combines consolidated pedagogical principles, socioemotional competencies, and adaptive monitoring, enhancing both prevention and mediation of conflicts in contemporary school contexts.

3. AI and Conflict Management in School Context

AI has become highly relevant in contemporary education (Lourenço & Valente, 2026a), not only as a tool for task automation but also as a cognitive and emotional mediator that can support learning processes, social interaction, and conflict resolution (Pacheco et al., 2025). Unlike traditional educational technologies that merely digitize content or facilitate task organization, AI is capable of interpreting language, inferring emotional states, adapting pedagogical responses, and anticipating the escalation of tension (Zhang et al., 2025), acting as a complementary support for teachers and students' socioemotional competencies.

3.1. Theoretical Foundations of AI Applied to Mediation

3.1.1. Natural Language Processing

Natural language processing is one of the central capabilities of AI that enables automatic interpretation of texts, conversations, and linguistic exchanges, including semantic nuances and contextual patterns that would be difficult to capture through manual analysis alone. In educational contexts, this technology can be used to analyze group discussions, forum messages, or peer communications to identify patterns that suggest conflict, misunderstandings, or negative affective states (Zhang et al., 2025).

Sentiment analysis, a specific natural language processing application that associates emotional loads with verbal expressions, makes it possible to infer when a student is frustrated, anxious, or in conflict with another, based on the terms chosen, tone, or conversation sequence (Wang et al., 2025; Zhang et al., 2025).

Emotional AI refers to systems capable of recognizing, interpreting, and responding to human emotional states, particularly through the analysis of language, sentiment, and interaction patterns in digital environments (Calvo & D’Mello, 2010; Picard, 1997). By capturing affective dimensions of language, this analysis can be integrated into emotional AI systems that modulate pedagogical responses based on detected emotional load, thereby promoting more sensitive and adaptive mediation.

International studies on emotional AI in education show that integrating natural language processing and sentiment analysis can infer students’ affective and cognitive states, aiding in adjusting educational and mediation responses. Zhang et al. (2025) conducted a systematic review and meta-analysis of studies on emotional AI in teaching, highlighting that AI applications can provide both cognitive and emotional support, with a positive impact on learning outcomes and the development of socioemotional competencies. This approach enables the system not only to recognize keywords associated with tension or conflict but also to capture nuances such as sarcasm, persistent doubt, or frustration signals that are relevant for real-time adaptive mediation.

Additionally, natural language processing can be applied to clustering algorithms and probabilistic models that categorize linguistic interactions as conflict, collaboration, or cooperation, offering the mediator (human or AI-assisted) a structured view of group dynamics. These algorithms, often based on unsupervised learning methods, can identify subgroups of students with similar response patterns, which are useful for both understanding conflict origins and planning personalized interventions (Pacheco et al., 2025; Zhang et al., 2025).

3.1.2. Computational Emotional Intelligence Models

EI, defined as the ability to perceive, understand, use, and regulate emotions, has been widely associated with better interpersonal relationships, collaborative conflict resolution, and greater emotional resilience (Mayer et al., 2016). When transposed to the computational domain, this structure implies that AI must be capable of recognizing emotions in textual contexts and online interactions and adapting its responses or strategies based on these inferences.

Computational EI models do not function in isolation; they are typically built on neural networks trained on language corpora labelled by educational psychologists, or on deep learning techniques capable of creating contextual representations of emotional states (Pacheco et al., 2025; Zhang et al., 2025). These models can be integrated into virtual agents that interact with students to detect tension signals, suggest resolution strategies, or reinforce cooperation messages.

The integration of computational EI with emotional AI makes it possible, for example, to respond to a sequence of negative comments between two students, offering prompts that encourage message reformulation, constructive expression of feelings, or proposal of an intersubjective solution. In this sense, computational EI models operationalize psychological theories of emotion regulation, transforming them into adaptive protocols that influence group dynamics in real time

(Mayer et al., 2016; Pacheco et al., 2025).

3.1.3. Integration between AI Engineering and Educational Psychology

The interdisciplinarity between AI engineering and educational psychology is essential for mediation systems to be pedagogically effective. Educational psychology provides criteria for assessing emotional states, classroom climate, and socio-emotional competencies, while AI engineering provides the algorithmic methods that enable these assessments to be made in real time (Rimm-Kaufman et al., 2023; Pacheco et al., 2025).

The convergence of these areas has been discussed in scenarios of “AI as pedagogical mediation,” where intelligent agents do not replace teachers’ roles but expand the capacity for detection and response to conflicts in complex educational environments (Pacheco et al., 2025; Zhang et al., 2025). This approach recognizes that identifying a negative emotional state is not enough; it must be pedagogically contextualized, weighing whether the intervention should be a reflection prompt, a pause suggestion, or signalling to the human mediator.

In summary, the theoretical foundations of AI applied to mediation combine linguistic interpretation capacity (natural language processing), affective analysis (sentiment analysis), and computational emotional regulation models, forming a cognitive-emotional framework that can support conflict management continuously, adaptively, and in a personalized way, going beyond mechanisms possible in exclusively human approaches (Mayer et al., 2016; Zhang et al., 2025).

From an operational perspective, the relationship between AI-based detection and conflict reduction can be understood as a mediated and multi-level process grounded in recent work on AI in education and learning analytics (Lourenço & Valente, 2026b; Pacheco et al., 2025; Zhang et al., 2025). AI systems continuously analyse linguistic and behavioural data to identify early signals of tension, such as negative sentiment, recurring disagreement patterns, or exclusionary interactions, drawing on advances in sentiment analysis and emotional AI (Calvo & D’Mello, 2010; Wang et al., 2025; Zhang et al., 2025).

Depending on the intensity and context of these signals, different types of responses may be activated within AI-supported educational environments. Lower-level tensions may trigger automated prompts directed at students, encouraging reflection, message reformulation, or perspective-taking, while more significant patterns may generate alerts for teachers or school mediators, enabling timely pedagogical intervention, consistent with human-centred AI approaches in education (Davar et al., 2025; Rimm-Kaufman et al., 2023).

These interventions align with extensive research on socioemotional competencies and conflict management in school contexts, which highlights the importance of emotional intelligence, classroom climate, and structured mediation strategies in preventing conflict escalation (Aldrup et al., 2022; Montero-Montero et al., 2021; Valente & Lourenço, 2020; Wang & Degol, 2016). In this sense, AI-supported interventions may contribute to the prevention of conflict escalation, improvement in the quality of interpersonal communication, strengthening of so-

socioemotional competencies, and the promotion of a more collaborative and emotionally regulated classroom environment (Brackett et al., 2019; Collie, 2020; OECD, 2019).

3.2. Practical Examples in the Classroom

The practical applications of AI in classroom conflict management present varying levels of empirical validation, as evidenced in recent reviews of AI in education and learning analytics (Hariyanto et al., 2025; Lourenço & Valente, 2026b; Pacheco et al., 2025). Within this landscape, certain technologies, such as educational chatbots and adaptive learning systems, already demonstrate growing empirical support in authentic educational contexts, particularly in relation to student engagement, personalized learning, and interaction quality (Labadze et al., 2023; Yin et al., 2024). In contrast, other applications remain in experimental or pilot phases, reflecting ongoing exploration of their pedagogical potential (Davar et al., 2025).

Current research indicates that AI in education is not merely a speculative or future-oriented concept, but rather an evolving field supported by prototypes and empirical studies that demonstrate its capacity to enhance communication processes, support mediation practices, and contribute to socioemotional development in schools (Pacheco et al., 2025; Rimm-Kaufman et al., 2023; Zhang et al., 2025). In particular, AI-driven conversational systems have been associated with changes in learning motivation and emotional engagement, both of which are closely linked to classroom interaction quality and relational dynamics (Brackett et al., 2019; Schutte et al., 2001; Yin et al., 2024).

Alongside these developments, immersive technologies such as virtual reality are increasingly investigated as tools for fostering empathy and perspective-taking in educational contexts, although their implementation remains largely at an early or experimental stage (Eisman et al., 2025; Khukalenko & Khanolainen, 2025). These approaches suggest emerging possibilities for strengthening socioemotional competencies and supporting conflict resolution processes within structured learning environments.

Overall, the variation in empirical maturity across these technologies highlights the importance of critically assessing their pedagogical integration. Evidence-based adoption remains essential to ensure that AI tools are aligned with educational objectives, particularly regarding classroom climate, student wellbeing, and socioemotional development (Collie, 2020; OECD, 2019; Wang & Degol, 2016). In practical terms, this implies that schools and educators should distinguish between mature, classroom-ready technologies and emerging experimental systems, adopting a cautious but open approach to innovation in conflict management practices.

3.2.1. Mediator Chatbot: Moderation and Feedback

Educational chatbots are among the most empirically supported AI applications in classroom contexts for communication support and socioemotional feedback,

functioning as automated conversational agents powered by AI capable of interpreting users' linguistic input and responding coherently, contextually, and pedagogically. In conflict management contexts, these agents can mediate conversations between students before they escalate into direct confrontations, acting as a first layer of automated mediation.

The implementation of natural language processing and sentiment analysis allows chatbots to:

- Detect hostile or ambiguous language in group chats;
- Send neutral prompts that encourage reflection, such as: "I understand this is getting difficult — can we rephrase the issue?";
- Offer resolution alternatives based on pedagogical best practices;
- Forward alerts to the teacher when tension levels exceed predefined thresholds.

Recent studies confirm that educational chatbots can improve interaction between students and teachers, provide real-time emotional and pedagogical support, and positively influence student motivation and engagement (Labadze et al., 2023; Yin et al., 2024). These systems allow pedagogical interventions to depend less on the teacher's immediate availability, making them especially useful on asynchronous platforms, such as online forums or collaborative work groups.

Additionally, the integration of computational emotional intelligence models enables chatbots to detect signals of emotional tension between students and provide adaptive responses. For example, in the case of a sequence of negative comments, the system can suggest message reformulation, encourage constructive expression of feelings, or propose collaborative solutions, operationalizing emotional regulation theories into adaptive protocols that influence group dynamics in real time (Labadze et al., 2023).

These agents do not replace the teacher's role; on the contrary, they expand pedagogical mediation capacity, offering continuous, personalized, and emotionally sensitive support to students. The use of mediator chatbots thus represents a promising strategy for integrating socioemotional competencies, sentiment analysis, and cognitive AI into conflict management in contemporary educational contexts.

3.2.2. Virtual Reality Simulators for Empathy Training

Virtual reality applications for empathy training remain largely in pilot or experimental phases, with emerging but still limited classroom-based empirical validation.

Besides chatbots, more advanced technologies such as virtual reality (VR) simulators are also being explored as tools for training socioemotional competencies, particularly cognitive empathy, the ability to understand others' perspectives and experiences. In conflict contexts, empathy plays a central role: students who can see a problem from another's perspective tend to adopt collaborative resolution strategies rather than reactive or competitive ones. VR simulators can create immersive scenarios in which students experience conflict situations first hand or as

observers, receiving adaptive feedback based on their choices during the simulation.

Recent reviews of VR training software show a growing range of applications with potential to enhance users' emotional and perspectival understanding, which is central to developing mediation and conflict resolution strategies (Khukalenko & Khanolainen, 2025). Additionally, empirical studies in educational contexts demonstrate that VR-supported empathy tasks can increase situational interest and emotional sensitivity among participants, suggesting a positive impact on the development of relational and cognitive competencies (Eisman et al., 2025).

Although much VR work is still in pilot or conceptual phase, academic literature indicates that immersive environments can increase emotional awareness and regulation capacity, crucial aspects for handling both digital and face-to-face conflicts. This type of application assumes that AI integrated into the simulator can adapt content and situation intensity based on each student's emotional and cognitive performance, reinforcing positive resolution strategies.

3.2.3. AI Personalized Learning Platforms

AI-based personalised learning platforms are among the most widely studied applications, with growing empirical evidence supporting their effectiveness in educational contexts.

Another practical application of AI in school contexts involves learning platforms that use advanced algorithms to adapt the educational path to each student's individual needs. These platforms can identify cognitive and emotional performance patterns, signalling when a student faces persistent difficulties or frustration, and offering adjusted content, alternative examples, or socioemotional training modules.

Systems of this type operate through machine learning, deep learning, and multimodal data analysis, integrating indicators such as response time, repeated choices, and the language used in comments or online interactions. When a recurring frustration pattern is detected, the platform can suggest interactive activities, emotional intelligence modules, or coaching sessions before the student advances to more complex tasks, thereby preventing conflicts stemming from demotivation or perceived injustice (Hariyanto et al., 2025; Paixão, 2025).

Additionally, these platforms can provide real-time, adaptive feedback, serving as emotionally and cognitively sensitive pedagogical assistants that complement the teacher's role. Freitas et al. (2025) highlight that AI can monitor engagement indicators, adjust content, suggest pedagogical breaks, reinforce self-regulation strategies, and promote more collaborative and balanced learning.

International studies indicate that AI-based personalization not only improves academic performance but also contributes to the development of socioemotional competence, which is fundamental for conflict prevention and mediation in the classroom. The possibility of anticipating frustrations and adapting learning experiences allows for reducing tensions between students, favoring the construction of an inclusive and cooperative educational environment (Freitas et al., 2025;

Hariyanto et al., 2025; Paixão, 2025).

In summary, AI-personalized learning platforms represent a powerful adaptive mediation tool, integrating cognitive and emotional support, promoting self-regulation and engagement, and preventing conflicts stemming from frustration, demotivation, or unequal access to digital experiences. This approach complements both EI models and traditional conflict management mechanisms, providing human mediators with a more complete view of individual and group dynamics in real time.

To facilitate comparison of different technologies used in classroom conflict mediation, **Table 1** summarizes the objectives, socioemotional impacts, advantages, and limitations of each approach.

Table 1. Practical examples of AI in the classroom.

Technology/Tool	Main Objectives	Socio-Emotional Impact	Advantages	Limitations
Mediating Chatbots	Detect hostile or ambiguous language, provide neutral prompts, suggest resolution strategies	Reduces tension, encourages constructive expression, supports emotional regulation	Real-time support, scalable, complements teacher mediation, personalised feedback	Cannot fully replace human judgement, limited understanding of complex social cues
VR Empathy Simulators	Train cognitive empathy, allow perspective-taking, provide adaptive feedback	Increases emotional awareness, enhances understanding of others' experiences	Immersive learning, enhances engagement, adaptable to individual performance	High cost, technical requirements, mostly pilot studies, limited classroom availability
Personalised Learning Platforms	Adapt content and pace based on cognitive and emotional indicators	Prevents frustration, supports self-regulation, reduces conflict arising from demotivation	Continuous monitoring, personalised interventions, integrates socio-emotional support	Requires careful data privacy management, risk of over-reliance on automated feedback

Source: Authors, based on the theoretical framework and literature review presented in this study.

The application of AI to mobile phone management in schools is still developing, with some approaches already tested in pilot studies, while others remain conceptual or exploratory in nature.

3.3. Application to the Mobile Phone Issue (<16 Years)

The application of AI to mobile phone management in school contexts (<16 years) can be operationalized through different technological strategies aimed at supporting attention regulation, preventing digital conflict, and fostering socioemotional development. These approaches range from gamified feedback systems and personalized behavioural nudges to monitoring tools and data-driven clustering techniques, each with different levels of pedagogical intervention and autonomy support. The following subsections present these applications in detail.

3.3.1. Gamified Dashboards and Personalized Nudges

AI-based gamified dashboards and nudging strategies have been explored in applied educational contexts, with emerging evidence supporting their role in pro-

moting self-regulation and attention.

AI systems can monitor mobile device usage patterns during classes, always respecting informed consent from students and families (Amez & Baert, 2020; Amez et al., 2021). Based on this data, they can provide gamified dashboards that encourage focused behaviors, showing progress indicators and virtual rewards that promote engagement and sustained attention.

Additionally, personalized nudging strategies can be implemented. Small behavioral suggestions, calibrated to students' cognitive and emotional profiles, help promote periods of focus and self-control without resorting to rigid punishments, thereby favoring self-regulation and socioemotional development (Brackett et al., 2019; Valente & Lourenço, 2022).

This approach is particularly useful for younger students, who may feel frustration when dealing with rigid technology use rules. By integrating gamification and adaptive nudges, AI acts as a sensitive mediator, encouraging autonomy, reducing digital distractions, and decreasing conflicts derived from frustration or demotivation (Amez & Baert, 2020; Flanigan & Titsworth, 2020).

3.3.2. Message Monitoring with Anonymous Alerts

These systems are increasingly explored in pilot implementations, although large-scale validation in school contexts remains limited.

AI algorithms can be applied to identify digital communication patterns associated with risk behaviors, such as cyberbullying, provocations, or hostility in collective chats (Corcoran et al., 2015; Machado et al., 2024). Always respecting informed consent and student privacy, these systems enable the issuance of anonymous alerts to teachers, facilitating early interventions before conflicts escalate and harm the classroom climate (Cunha et al., 2016; Montero-Montero et al., 2021).

This type of monitoring serves as a support layer for human supervision, reducing response times and protecting students from prolonged negative experiences, especially in digital contexts outside school hours. Additionally, it integrates adaptive mediation strategies, promoting safer, more emotionally regulated educational environments (Santamaría Villar et al., 2021; Wang & Ngai, 2020).

3.3.3. Clustering and Digital Equity

Clustering approaches for digital behaviour analysis remain predominantly at a conceptual or early implementation stage in educational settings.

AI algorithms based on clustering can identify digital behavior patterns among students, grouping those with similar needs or profiles (Amez & Baert, 2020; Amez et al., 2021). This analysis enables the identification of students who exhibit frequent distraction or difficulty managing online study time, providing information for more personalized and equitable pedagogical interventions (Abdulkareem & Lennon, 2023; Assefa et al., 2025).

Based on these groupings, teachers and educational systems can propose digital mindfulness modules, targeted socioemotional support, or recommendations for

healthy technology use, thereby promoting more inclusive learning environments and reducing inequalities stemming from the digital divide (OECD, 2019; Flanigan & Titsworth, 2020).

Table 2 summarizes the main technologies applied to mobile phone use management in the school context, highlighting pedagogical objectives, socioemotional impact, advantages, and limitations.

Table 2. Application of AI to mobile phone management (<16 years).

Technology/Tool	Main Objectives	Socio-Emotional Impact	Advantages	Limitations
Gamified Dashboards	Monitor device use, incentivise focus, track progress	Encourages self-regulation, promotes attention, reduces frustration	Engaging, visually clear, motivates desired behaviours	May require continuous updating, risk of overemphasis on rewards
Personalised Nudges	Provide tailored behavioural suggestions based on individual profiles	Supports autonomy, reduces conflicts from distractions	Low-cost, subtle intervention, complements teacher guidance	Effectiveness varies individually, requires accurate student profiling
Anonymous Alert Systems	Detect risky communications (cyberbullying, hostility) and alert teachers	Prevents escalation, protects students from prolonged negative experiences	Early intervention, preserves student privacy, supports safe online interaction	Relies on correct pattern detection, cannot replace human judgement
Clustering Analysis	Identify student groups with similar usage or attention patterns	Allows targeted interventions, supports equitable learning	Enables personalised support, highlights at-risk students	Dependent on data quality, requires ethical oversight to avoid bias

Source: Authors, based on the theoretical framework and literature review presented in this study.

3.4. Ethical and Methodological Considerations

3.4.1. Privacy, Security, and Governance

The implementation of AI systems that monitor language, behavior, and relationships in educational contexts raises critical issues of privacy, security, and digital equity. It is essential that any collection of personal data be preceded by explicit informed consent, offering clear opt-in and opt-out options for students and families, and ensuring robust anonymization and data protection mechanisms (Abdulkareem & Lennon, 2023; Assefa et al., 2025).

Respect for privacy is especially relevant in underage populations, where data protection legislation is more restrictive and requires AI systems not only to collect information ethically but also to use it for clear pedagogical purposes, avoiding any form of discrimination or algorithmic bias (Flanigan & Titsworth, 2020).

Furthermore, data governance must be guided by digital equity principles, ensuring that all students have safe and responsible access to educational technologies and avoiding the amplification of existing inequalities (OECD, 2019). Audit strategies, algorithm transparency, and continuous monitoring can support the trust of teachers, students, and families, allowing AI to be used pedagogically, safely, and inclusively.

3.4.2. Algorithmic Bias and Transparency

AI algorithms are trained with data that may reflect existing social and digital biases; without care, educational systems can amplify inequalities or unfairly interpret multicultural and multilingual interactions. To mitigate these risks, the literature recommends regular algorithm audits, transparency in decision logic and continuous pedagogical supervision, ensuring technological interventions respect equity and diversity (Abdulkareem & Lennon, 2023; Assefa et al., 2025; OECD, 2019).

Attention to algorithmic biases is not only ethical but also pedagogical, as unfair automated decisions can affect school climate, student motivation, and performance, especially for those already facing socioeconomic or digital barriers (Flanigan & Titsworth, 2020).

3.4.3. Mixed Metrics for Impact Assessment

The evaluation of AI initiatives in conflict management must be multifaceted, combining quantitative metrics (such as reduction in conflict incidents and improvements in academic performance) and qualitative metrics (such as sense of belonging, reports of emotional engagement, and perceived satisfaction). This approach ensures that not only cognitive effects are captured but also socioemotional and relational impacts, which are essential for a complete view of pedagogical effectiveness (Collie, 2020; Coelho et al., 2023; CASEL, 2023; Rimm-Kaufman et al., 2023).

In conclusion, AI offers a robust set of tools to support conflict management in school contexts, ranging from natural language processing -based adaptive mediation to gamified systems that encourage self-regulation and digital equity (Davar et al., 2025; Lourenço & Valente, 2026a). Studies on emotional AI show that integrating technologies with psychological theories and educational practices can promote more collaborative, emotionally resilient, and inclusive learning environments (Zhang et al., 2025; Collie, 2020; Coelho et al., 2023).

The key to responsible and effective use lies in the balance between technological capabilities and human supervision, ensuring AI complements, and does not replace, the emotional and social mediation central to educational experiences. With cautious implementation grounded in rigorous ethical principles and comprehensive impact metrics, AI can strengthen school conflict management by synergistically integrating cognitive, emotional, and technological dimensions (CASEL, 2023; Lourenço & Valente, 2026b).

4. Practical Solutions and Conclusion

The growing integration of digital technologies in the educational context has introduced new dynamics of interaction, as well as new foci of tension and conflict among students. In this scenario, AI emerges not only as a technological tool, but as a pedagogical and socioemotional mediator, capable of supporting behavior regulation, empathy promotion, and classroom climate improvement. Based on

the theoretical foundations and applications discussed previously, this chapter proposes practical strategies, good pedagogical practices, and a conclusive synthesis that integrates technological, emotional, and educational dimensions.

4.1. Strategies to Reduce Technological Conflicts

Reducing technology-mediated conflicts requires an integrated approach that combines intelligent digital tools with pedagogical and socioemotional principles. AI can play a central role in this process, especially when articulated with socio-emotional learning models and conflict resolution theories.

One of the most promising strategies is to integrate AI mediator systems into educational platforms, such as group chats, forums, and online collaborative environments. These systems can act as a first line of regulation by identifying patterns of hostile or ambiguous language and suggesting constructive rephrasing. Studies on educational chatbots indicate that these agents can improve communication, enhance student engagement, and provide real-time adaptive feedback (Labadze et al., 2023; Yin et al., 2024). By integrating emotional regulation principles and constructive communication, these systems help prevent conflict escalation and promote more collaborative, reflective, and pedagogically oriented interactions.

Another relevant strategy involves training in empathy and emotional intelligence through immersive technologies such as VR. The literature demonstrates that empathy is strongly associated with the quality of pedagogical interactions, positive social outcomes in school contexts, and constructive conflict resolution (Aldrup et al., 2022). VR environments allow students to experience conflict situations from different perspectives, promoting the development of cognitive empathy and emotional involvement. Recent studies indicate that immersive tasks can increase emotional sensitivity and situational interest, essential factors for meaningful social learning (Eisman et al., 2025; Khukalenko & Khanolainen, 2025).

Additionally, implementing flexible and inclusive school policies on digital device use is fundamental. Rather than exclusively restrictive approaches, the literature suggests the need for strategies that promote more balanced and conscious management of technology use, since digital distraction and excessive use can compromise learning (Amez & Baert, 2020; Flanigan & Titsworth, 2020). AI can support these policies through ethical monitoring systems and personalized feedback dashboards, encouraging more balanced behaviors and reducing conflicts associated with technology misuse.

These strategies should be framed within an ecological perspective of education, where student behaviour is influenced by multiple interconnected systems, from the classroom environment to the broader digital context (Bronfenbrenner, 1979). Thus, AI integration in conflict management should not be seen as an isolated solution, but as part of a broader educational ecosystem, oriented towards students' integral development.

4.2. Best Pedagogical Practices

The effectiveness of technological solutions depends largely on how they are integrated into consistent pedagogical practices. The literature in educational psychology and socioemotional learning emphasises that the development of social and emotional competencies is a critical factor for conflict prevention and for promoting positive and emotionally safe learning environments (Schonert-Reichl, 2017; Collie, 2020).

One of the best practices consists of the articulation between socioemotional education and technological mediation. Structured socioemotional learning programs, such as those based on the RULER model, demonstrate positive impact on classroom climate, student involvement, and academic performance (Brackett et al., 2019; Coelho et al., 2023). When combined with AI tools, such as sentiment analysis or adaptive feedback, these programs can be strengthened, allowing more personalized and continuous interventions.

Another relevant practice is planning hybrid activities (offline and online), which help balance technology use with meaningful face-to-face interactions. Research shows that excessive use of digital devices can impair attention, academic performance, and the quality of social interactions (Rosen et al., 2013; Junco, 2015). Thus, combining digital activities with face-to-face reflection moments can reduce tensions, promote collaboration and mitigate inequalities associated with technology access and use (Assefa et al., 2025; OECD, 2019).

Continuous and adaptive assessment of student behaviour constitutes another essential dimension. AI systems can support this process by collecting and analyzing data on participation, engagement, and social interactions. However, this assessment must be complemented by qualitative instruments and by pedagogical interpretation sensitive to context (Pacheco et al., 2025; Rimm-Kaufman et al., 2023). The combination of quantitative and qualitative data allows a more complete understanding of group dynamics, facilitating more effective interventions adjusted to students' needs.

It is also important to highlight the teacher's central role as a mediator. Technology can amplify detection and intervention capacity, but does not replace the relational and ethical dimension of teaching practice. Studies on educational chatbots indicate that these agents can improve communication, support student involvement, and provide real-time adaptive feedback, particularly in conflict mediation scenarios where teacher emotional intelligence significantly influences resolution strategies (Labadze et al., 2023; Valente & Lourenço, 2020, 2022; Valente et al., 2023; Yin et al., 2024). Thus, teacher training must include not only technological competencies, but also emotional and mediation competencies.

4.3. Conclusion

The analysis developed throughout this article allows affirming that AI has significant potential to support conflict management in school contexts. Through technologies such as natural language processing, sentiment analysis, educational

chatbots, and immersive environments, AI can contribute to early conflict identification, empathy promotion, and student emotional regulation.

However, this potential can only be fully realized through an interdisciplinary approach that integrates contributions from AI engineering, educational psychology, and education sciences. Emotional intelligence models (Mayer et al., 2016) and socioemotional learning programs (Schonert-Reichl, 2017) provide the necessary theoretical framework to guide the development of pedagogically relevant AI systems. In turn, conflict resolution theories (Johnson & Johnson, 2017; Deutsch et al., 2011) offer fundamental principles for effective mediation in educational contexts.

Despite the advances, important challenges persist. The need for longitudinal studies that assess AI impact over time is particularly relevant, as is the importance of ensuring transparency, equity, and respect for privacy in data use. Furthermore, the scalability of solutions in diverse educational contexts, especially in the European context, requires attention to cultural, social, and institutional differences.

It is important to acknowledge that this study is conceptual in nature and relies primarily on secondary literature sources, which may limit the generalisability of its conclusions. Furthermore, the effectiveness and applicability of the proposed AI-based approaches may vary significantly across different educational levels, institutional contexts, and national policy frameworks. These variations should be taken into account when interpreting the practical implications of the study, in order to avoid overgeneralisation and to ensure a context-sensitive application of the proposed framework.

In summary, AI should not be understood as a substitute for human mediation, but as a complementary tool that can strengthen educational systems' capacity to promote more inclusive, collaborative, and emotionally healthy environments. The future of conflict management in education will depend, to a large extent, on the ability to integrate technology and pedagogical humanism in a balanced, ethical, and well-founded manner.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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