



Socio-Pedagogical Possibilities of Using Artificial Intelligence to Prevent Cyberbullying at School

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ABSTRACT: Cyberbullying has become one of the most serious threats to students' psychological well-being in the digital era. The rise of artificial intelligence (AI) opens new socio-pedagogical possibilities for preventing and responding to online aggression in educational environments. This paper examines how AI-based technologies – such as sentiment analysis, machine learning moderation systems, and predictive algorithms – can assist teachers and social pedagogues in identifying, preventing, and addressing cyberbullying. The study emphasises the importance of integrating AI tools with human-centred approaches that foster digital empathy, ethical awareness, and emotional resilience among students. A conceptual socio-pedagogical model of AI-assisted cyberbullying prevention is proposed, combining technological monitoring with pedagogical guidance and digital literacy education. The paper concludes that AI cannot replace the role of educators, but can enhance their professional capacity to ensure a safer and more inclusive digital school environment. Future research directions include developing localised AI solutions tailored to the cultural and linguistic contexts of schools.

KEYWORDS: artificial intelligence, cyberbullying prevention, socio-pedagogical model, digital safety, emotional intelligence, digital empathy, school environment, educational technology.

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Introduction

In recent years, the digitalisation of education has significantly transformed the communication landscape among school students. While digital tools have created new learning opportunities, they have also facilitated the spread of harmful behaviours such as cyberbullying. Cyberbullying, defined as the deliberate and repeated use of digital technologies to harm, intimidate, or humiliate others, has become a critical socio-pedagogical challenge. Its consequences include anxiety, depression, and social isolation, affecting not only victims but the overall school climate. [8]

Traditional preventive approaches—based on moral education, psychological counselling, and disciplinary measures—are often insufficient in detecting and addressing online aggression in real time. Consequently, educators and researchers are increasingly exploring the potential of artificial intelligence (AI) as an innovative solution. AI technologies can automatically detect hate speech, monitor digital communication patterns, and provide early warnings to teachers and social pedagogues. [3]

From a socio-pedagogical perspective, AI offers not only technical but also humanistic possibilities. It can strengthen the teacher's role as a mediator, enhance the culture of digital empathy, and create a safe virtual space for students to learn and communicate. However, the implementation of AI must be ethically guided and pedagogically grounded to avoid reinforcing biases or surveillance anxiety. Therefore, studying the socio-pedagogical potential of AI in preventing cyberbullying is essential for building a sustainable and safe digital education ecosystem.

Research Aim and Research Questions

The primary objective of this study is to investigate the socio-pedagogical potential of utilising artificial intelligence to prevent cyberbullying in schools and to determine how AI tools can augment the preventive, diagnostic, and corrective functions of social pedagogy within the digital learning environment.

To achieve this aim, the following research objectives were formulated:

1. To analyse the current state of AI implementation in cyberbullying detection and prevention.
2. To define the socio-pedagogical principles guiding the ethical use of AI in education.
3. To propose a conceptual model integrating AI technologies with pedagogical approaches to digital safety and empathy.

Accordingly, the study addresses the following research questions:

- How can AI technologies support teachers and social pedagogues in identifying and preventing cyberbullying at school?
- What socio-pedagogical conditions are necessary for the effective integration of AI into school digital safety strategies?

- How can the use of AI contribute to developing digital empathy and responsible online behaviour among students?

The purpose and questions reflect the interdisciplinary nature of the research, which bridges technology, pedagogy, and psychology in the pursuit of safer digital learning environments.

Analysis of Recent Research and Publications

Over the past five years, the integration of artificial intelligence (AI) into educational contexts has become a significant focus of global research. Scholars such as Lamanauskas and Augienė [5] emphasise that digital learning environments require new pedagogical competencies, including technological literacy and digital ethics. In the context of cyberbullying prevention, AI technologies such as natural language processing and machine learning models are used to automatically recognise online harassment, hate speech, and emotional distress. [1]

According to Wales [9], early identification of aggressive digital behaviour through AI monitoring can significantly reduce the frequency of cyberbullying incidents. Similarly, Li and Huang [6] highlight that AI-assisted platforms enable teachers to track student interactions without violating privacy norms, provided that ethical guidelines are observed. Recent projects, such as Google's "Perspective API" and Microsoft's "Responsible AI Toolkit," illustrate how algorithms can analyse tone and content to flag potentially harmful messages in real-time. [7]

At the socio-pedagogical level, Hassan and Cowie [3] argue that AI should be viewed not as a replacement for human educators but as an additional tool to foster digital empathy and moral responsibility. Research by Dzhurinsky (2023) supports this idea, suggesting that schools should integrate AI into comprehensive educational programs that foster emotional intelligence, effective communication, and self-regulation.

Although the technological potential of AI in cyberbullying prevention is widely discussed, a lack of models remains that connect these technologies with social pedagogy principles. Few studies have explored how teachers and social pedagogues can utilise AI collaboratively to enhance digital citizenship and promote ethical digital interactions. Therefore, further research should address the socio-pedagogical framework that balances technological efficiency with humanistic values.

Research Results

Theoretical analysis

The socio-pedagogical approach to preventing cyberbullying is based on the integration of technological and humanistic dimensions. Artificial intelligence, when applied ethically, can serve as an instrument of early detection and moral education rather than control and punishment. It supports the teacher's role as a digital mentor who facilitates safe communication, empathy, and mutual respect among students. [4]

Within this framework, the pedagogical potential of AI includes:

- Preventive function – identifying early signs of online aggression through linguistic and behavioural pattern recognition;
- Diagnostic function – analysing emotional tone and relational networks to detect vulnerable students;
- Corrective function – providing feedback, simulations, and digital literacy exercises to strengthen social responsibility.

AI-Assisted Socio-Pedagogical Model. The proposed model emphasises cooperation between teachers, social pedagogues, students, and AI systems. It is structured around three interrelated components:

1. Technological Monitoring Layer – includes AI-based tools that analyse text, images, and online interactions for signs of bullying;
2. Pedagogical Mediation Layer – involves educators interpreting AI-generated data to organise preventive interventions, discussions, and empathy-building activities;
3. Ethical-Educational Layer – focuses on developing digital citizenship, moral reasoning, and self-regulation among students through reflective learning practices.

These components collectively form an ecosystem where AI enhances, but does not replace, the human factor in education.

Table 1

AI-Based Strategies for Cyberbullying Prevention in Schools

Level of Implementation	AI Tools and Examples	Socio-Pedagogical Outcome
School administration	Predictive analytics dashboards, risk-detection software	Institutional digital safety policy and early intervention
Teacher practice	Chat analysis, sentiment detection systems	Timely response to online aggression and counseling referral
Student education	AI-based digital empathy games, virtual reality simulations	Emotional intelligence and respectful digital communication
Parental involvement	AI monitoring reports, safety apps	Strengthened school-family collaboration and awareness

Source: author's own development.

Discussion

AI solutions cannot be applied in isolation from the social and emotional dimensions of learning. The most effective strategies combine algorithmic analysis with pedagogical dialogue and community participation. As Martin et al. [7] suggest, AI should assist educators in creating “learning ecosystems of

care” rather than surveillance systems. Moreover, data privacy and ethical transparency must remain central to any implementation process. [5]

By embedding AI into social pedagogy, schools can move from reactive to proactive models of cyberbullying prevention—transforming technology into a tool of empowerment, empathy, and digital safety culture.

Conclusions

The study demonstrated that the socio-pedagogical use of artificial intelligence can significantly strengthen preventive and educational measures against cyberbullying in schools. When ethically integrated, AI technologies provide teachers and social pedagogues with new possibilities for early detection, personalised intervention, and moral guidance in digital communication. The proposed three-layer model – technological, pedagogical, and ethical – establishes a balanced framework in which AI complements, rather than replaces, human responsibility and empathy.

At the same time, the research highlights the importance of continuous teacher training and awareness-raising among parents and students to ensure that AI-based systems are used transparently and inclusively. Cyberbullying prevention should not rely solely on automated detection but should be embedded in the broader context of digital citizenship, emotional intelligence, and respect for human dignity.

Future research should focus on developing culturally adapted AI models and pedagogical programs that reflect the specific linguistic and social realities of schools. By doing so, educators and researchers can ensure that technology serves the values of humanity, safety, and education for all.

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