FROM PEDAGOGICAL MEDIATION TO ALGORITHMIC PRESENCE: GENERATIVE AI AND THE TRANSFORMATION OF THE EDUCATIONAL RELATIONSHIP

Giuseppe Russo[1]
University of Macerata
g.russo22@unimc.it

Luigi Felaco
University of Bari
luigi.felaco@uniba.it

Double Blind Peer Review

Citation
Russo G & Felaco L. From Pedagogical Mediation to Algorithmic Presence: Generative AI and the Transformation of the Educational Relationship. *Italian Journal of Health Education, Sports and Inclusive Didactics, 10*(4).

Doi: https://doi.org/10.32043/gsd.v1i4.1861

Copyright notice:
© 2023 this is an open access, peer-reviewed article published by Open Journal System and distributed under the terms of the Creative Commons Attribution 4.0 International, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

gsdjournal.it
ISSN: 3103-5744

ABSTRACT
The widespread diffusion of generative artificial intelligence within educational contexts is radically transforming both learning processes and the teacher–student relationship. The disintermediation produced by systems grounded in logics of statistical plausibility increasingly assigns AI a central role not only in the construction of knowledge, but also in practices of emotional support and listening to students. Drawing on a mixed-methods study involving ninety upper secondary school students aged 17–18, this contribution aims to analyse the gradual transition from the use of AI as an instrumental device for cognitive support to its configuration as a "relational presence" endowed with a para-social dimension. Particular attention is devoted to the mechanisms of validation increasingly demanded of AI, which have traditionally belonged to learning processes and educational relationships grounded in mediation, recognition, and the intersubjective construction of knowledge.

KEYWORDS
AI companion, mediation, educational-emotional relationship.

Received 09-07-2026
Accepted 26-09-2026
Published 30-10-2026

[1] Paragraph 1 was written by Giuseppe Russo. Paragraph 2, on the other hand, was written by Luigi Felaco. Paragraphs 3, Discussion, and 4, Conclusions, are the result of the two authors' joint work

1. The Crisis of Human Mediation and Emerging Vulnerabilities in Digital and AI Environments

Against the backdrop of the contemporary landscape, a profound epistemological and educational crisis is becoming increasingly apparent, one that cuts transversally across the very way in which knowledge circulates, takes shape, is learnt and organised. The process currently underway is redefining the theoretical conditions and points of reference through which individuals make sense of the world and orient their actions, guiding them within interpretative coordinates that shape both subjective and collective experience (Quattrociocchi, 2025; Bonetti & Quattrociocchi 2023; Rowland & Estevens, 2025, Le Nepvou, 2025). Although it forms part of a wider set of social and cultural changes, the divide that has emerged appears to be closely linked to the immediate availability of a growing volume of data with which people come into contact on a daily basis (Amadori & Mascheroni, 2024). Immediate and virtually unlimited digital access to a vast spectrum of knowledge resource – many of which were previously restricted and accessible mainly only to small communities – has made these archives of information available far beyond their original specialist fields. Whilst significantly expanding the circulation of content, the collapse of most of the barriers to the availability of knowledge has at the same time fostered a gradual shift away from contexts and forms of mediation – of a dialogical and analytical nature – that made its conscious internalisation possible. The greater availability of information and data – nowadays often detached from the mediating practices that used to accompany their interpretation – has had a profound impact on the development of critical thinking, contributing, in part, to the impoverishment of shared reflective thought (Stowell, 2024).

Based on the analysis put forward by Ben Williamson *et al*., it can be observed that the prevalence of a digital infrastructure of knowledge is bringing about a shift of a distinctly epistemological nature, as it reduces the significance of human mediation and transfers increasingly substantial shares of intellectual authority to automated systems now tasked with legitimising knowledge (Williamson *et al.*, 2025). In the wake of this

transition, learning – in the common perception – ends up moving away from the image of a slow, layered process of internalisation, to be achieved with effort through dialogue with mentorship figures, and increasingly takes on the characteristics of an isolated, speed-oriented performative process (Allouche, 2024). The emergence of a social order increasingly influenced by artificial intelligence – whilst frequently ignoring its limitations and its inability to generate knowledge autonomously – but only to extract data with fluctuating results, encourages the emergence of practices of operational dependence and patterns of cognitive outsourcing – behaviours which have often been recognised as symptoms of a decline in initiative and in the ability to exercise independent judgement and discernment (Kosmyna *et. al.*, 2025). Furthermore, individuals' relationship with learning processes and the concept of personal development is being profoundly reshaped by the growing divergence between the temporal dimension of subjective experience and the accelerated rhythms that characterise the contemporary world (Decuypere & Vanden Broeck, 2020).

The change described has inevitably had an impact on the education field, where the relationship between educators, students and teachings contents has witnessed a weakening of those tools of cognitive mediation which for a long time have provided continuity and coherence to the pedagogical experience. Rooted in a sense of neutral transparency and objectivity that is as seductive as it is artificial, the consolidation of a problematic relationship with new forms of learning serves to diminish awareness of the value of the hermeneutic interventions necessary for genuine learning and self-cultivation (Passeron & Jakoviks, 2024; Lingua & Zamengo, 2025). The critical issues outlined form part of a long-standing and widespread deterioration in classical models of authority and knowledge transmission, a process that Hannah Arendt had already lucidly identified at the turn of the 1950s and 1960s. At that time, the German philosopher interpreted the loss of credibility of the expert as the result of an educational breakdown stemming from the dissolution of intergenerational bonds and the role of tradition (Arendt, 2006, pp. 173-196).

Contemporary transformations, taking place within a profoundly different historical context, do not correspond to the issues and dynamics described by Arendt; nevertheless, they appear to follow the same trajectory of progressive erosion of traditional forms of educational mediation and, more generally, of the conditions that make the transmission of knowledge possible. Against this evolving backdrop, the perception is becoming

increasingly widespread in popular thinking that human presence and the very physicality of educational environments – overwhelmed by an artificial performativity – may end up playing an increasingly marginal role. Educational institutions are thus seeing their role in shaping young people and symbolically sharing knowledge eroded, whilst a wide range of pedagogical roles – which used to ensure regulatory balance and the ability to provide cultural guidance – are losing their central importance (Lingua & Zamengo, 2025). In the midst of this climate, the teaching profession – historically linked to the transmission of knowledge and the development of an ethical conscience – is confronted with the extreme manifestation of that crisis of recognition foretold by Arendt. In the current scenario, the role of the educator is steadily losing its stability and public authority, while systems based on computational and algorithmic processing – recognised as objective and reliable – are becoming sources of answers that seem almost providential, yet are rarely subjected to any genuine analytical scrutiny (Arendt, 2006, pp. 173-196; Pisano, 2025, pp. 267-272).

The effects of this condition have a broader impact on the third pedagogical space, understood as a place for coordination and dialogue between specialist educative figures, learners, technical tools and educational environments, as well as a context for the negotiation of meanings and the co-construction of knowledge. Recalibrated on the basis of new premises arising from the pervasive presence of digital logic centred on tracking, classification, prediction and standardisation, it sees the dialectical and relational web that underpinned its vitality drastically eroded, losing a significant part of the capacity for mediation and connection that ensures its educational fruitfulness (Gutiérrez, 2008; Ferrari, Triacca & Braga, 2021).

The deterioration of intermediation, followed by the decline in cognitive faculties and the ability to exercise judgement, also affects the affective and emotional sphere with particular intensity. The most evident manifestations of this issue are found especially among the younger age groups of the population, where there is a tendency to develop a dependence on chatbots and AI. The appeal of these digital systems — amplified by the search for new points of reference — lies in their constant availability, which meets the need for immediacy and for validation and emotional reassurance, needs felt particularly strongly by adolescents (Sun *et al*., 2026; Kim *et. al*., 2025). Although some academic literature highlights its positive effects, both on learning and on psychological well-being (Wu & Yu, 2024; Liu *et al*., 2025; Li *et al.*, 2025; Feng *et al.*, 2025), numerous studies show that the younger generations' growing familiarity

with AI is contributing to the consolidation of adverse effects on mental health, with the emergence of deviant behaviour and behavioural patterns characterised by pseudo-intimacy with these technologies (Skjuve *et al*. 2021; Banks, 2024; Wu, 2024; 2026; Herbener & Damholdt, 2025).

Attributing supposed mental agency to artificial intelligence systems – with which capacities for empathic understanding are associated, yet which remain the result of a statistical simulation, often fuelled by sycophantic dynamics – can have particularly destabilising effects. The repercussions affect not only the development of identity and the formation of personal experience, but also cognitive and learning processes, particularly when such mechanisms become embedded in life trajectories already characterised by psychological and relational vulnerabilities (Carro, 2024 Mishra & Henriksen, 2025; Liu, 2025; Cheng *et al*, 2026; Batista & Griffiths, 2026; Ibrahim *et al*, 2026). When our connection with chatbots and digital devices takes on an emotional dimension, the distinction between interpersonal relationships and digital simulation begins to blur, to the point where the line between genuine reciprocity and algorithmic responses becomes unclear. Under these conditions, abnormal forms of human-machine interaction may develop, leading to persistent states of intense anxiety and intrusive thoughts, accompanied by a reduced willingness to invest in human interpersonal relationships, as the other person is gradually replaced by an artificial interlocutor (Fang *et al*., 2025; Blake *et al*, 2026; Namvarpour 2026). This leads to a weakening of the fundamental mediating mechanisms that enable us to engage with otherness, causing the user to become emotionally invested in a relationship that remains structurally asymmetrical, in that the AI and the chatbot involved – unable to access semantic understanding or the meaning of lived, empathetic experience – leave the user at the mercy of a distorted perception of reality (Wu, 2024; Neugnot-Cerioli, 2026). In cases where, as a result of intensive use, digital tools and large language models (LLMs) establish themselves as cognitive reference points and AI companions, they do not, however, appear to be able to alleviate situations of persistent social isolation. More often than not, in such cases, loneliness is re-organised within routine relational patterns – which are potentially more stable and difficult to break – from which new interpersonal vulnerabilities and distinctive forms of connected alienation arise. (Wu *et al*., 2026; Fakouri, 2026).

The habit of experiencing relationships mediated by the digital world and AI is helping to reshape the interpretative frameworks and skills through which individuals recognise and attribute meaning to their own and others'

emotional states, undermining the very foundations of social interaction and community dynamics, and leading to a collective intensification of social exclusion and perceived loneliness (Nowland *et al*., 2018; Zhang *et al*., 2025). Interaction with artificial intelligence and digital systems then introduces paradigms of constant availability and instant response which, as well as transforming emotional and relational expectations, directly affect the dynamics of thought, with reflexivity increasingly giving way to the immediacy of reaction (Van Lissa, 2022; Zhang *et al.*, 2023).

The gradual narrowing of the scope for cultivation of doubt – fuelled by the growing availability of immediate answers provided by algorithmic and digital environments – is contributing to a general difficulty in independently interpreting real-life situations and contexts. A significant transformation can be observed in the way individuals relate to uncertainty and to personal, historical, and social crises, which are increasingly experienced as events that resist interpretation and can no longer be readily situated within frameworks of meaning that are collectively recognised. In some cases, a suspension of the analytical process becomes apparent, which results in a withdrawal from the search for meaning or, alternatively, in a reliance on external sources perceived as capable of providing definitive salvific solutions. The same analytical difficulty also applies to our relationship with the risks of modernity, as outlined by Ulrich Beck (1992; 2009), which is characterised by increasing complexity. Whilst these risks were already characterised by limited accessibility to immediate perception, the cognitive and socio-affective biases that permeate digital environments further obscure their interpretation, undermining our ability to interpret the transformations of the contemporary world and to devise informed responses.

The revival of traditional forms of mediation operated by environments and guide figures such as teachers – who continue to play a significant role in education – therefore takes on strategic importance, as they provide a space for dialogue within which uncertainty can be explored and transformed into an opportunity for shared understanding. The increase in cognitive and relational distress, coupled with the growing difficulty of finding one's bearings within a complex and rapidly changing reality – one that is increasingly shaped and permeated by technological logic and digital ecosystems – calls for reflection on the actual state in which these phenomena manifest themselves and on their possible future developments. In this situation, it is necessary to put in place measures that restore the central role of human mediation and spaces for dialogue, as it

is only through these that we can influence the long-term trajectories of learning and mental health for present and future generations. In light of these premises, it is of crucial importance to collect detailed and contextually situated data, capable of verifying the validity of general models and clarifying the actual scope for intervention, without disregarding the contribution of large-scale surveys but rather supplementing them with an analysis of recurring behavioural patterns in the specific contexts in which the evidence, in order to gain an accurate perspective on the development of the phenomena under consideration.

2. Adolescents and AI: the educational relationship in a knowledge-based survey across the Taranto area

AI companions, understood as conversational chatbots designed to entertain users and foster the perception of continuous and personalized forms of emotionally significant social relationships, represent emerging opportunities and risks in the construction of relational processes among individuals in developmental age and in their educational growth trajectory. Whether they function as writing and data-retrieval assistants or as chatbots primarily aimed at simulating social relationships, their use is steadily increasing. The use of artificial intelligence in adolescence oscillates between information-seeking and writing-support functions, which are still predominant, and increasingly entertainment-oriented uses, including the simulation of friendly, affective, and educational relationships. In such digital contexts, interest in information and learning tends to intertwine with the need for recognition, validation, and support dimensions that are central to educational relationships and identity construction processes.

On the other hand, educators themselves express concern that individuals in developmental age, particularly during adolescence, may be especially vulnerable to AI companions due to their agreeableness feature, understood as a design orientation toward user compliance and conversational alignment (Sun *et al*., 2026). In this regard, several significant findings emerge from a recent exploratory survey conducted within the research project "*Paideia/Bildung/Ausbildung per il XXI secolo. La formazione come sfida per l'inclusione in terra Ionica"*, coordinated by Professor Adriana Schiedi of the Ionian Department of the University of Bari "Aldo Moro." The study "*Esposizione agli schermi e alle AI"*, conducted by the same researcher in collaboration with Luigi Felaco, aimed to investigate

adolescents' screen time, their modes of AI usage, and students' perceptions of the role of educators and artificial intelligence in learning processes. The study, conducted through a predominantly quantitative survey design, involved 86 students aged between 17 and 18 enrolled at I.I.S.S. Quinto Orazio Flacco in Palagiano (TA), and is based on twelve items, not exclusively closed-ended. The rationale of the study lies in examining the relationship between individuals in developmental age and screens, time, and modes of use of conversational AI systems, which, by design choices, incorporate relational features intended to enhance engagement and foster emotional attachment.

The presence of AI companions in adolescents' lives has multiple implications. According to the Stimulation Hypothesis (Sun *et al.*, 2026), positive experiences within online communication are entirely possible. Such interactions may strengthen existing social relationships and enhance relational competencies, providing an opportunity for social rehearsal, allowing adolescents to practice self-disclosure and emotional expression without fear of judgment or rejection. Moreover, according to Sun, positive interactions with AI as virtual companions may reduce loneliness, increase self-esteem, and decrease psychological stress, fostering a sense of belonging and proving useful even within family relationships, where AI companions may reduce misunderstandings and offer personalized recommendations to family members.

However, the Parental Technoference and Problematic Media Use in Children: Meta-Analysis provides robust evidence of an association between parental technoference and problematic digital media use among both minors and adults, particularly parents (Zhao, Tang, Wang *et al*., 2025). Technoference refers to the interference of digital technologies in parent–child relationships. A parent's use of such technologies is not neutral for the adolescent: it reduces the quality of educational and affective interactions and increases screen time, leading to cyber relational addiction, a pathological behavioral pattern in which individuals spend excessive time online yet are unable to sustain meaningful offline relationships in the absence of digital mediation (Iavarone, 2022).

Furthermore, additional risks associated with AI companions must be considered. Among the most relevant is the displacement hypothesis, according to which online interactions, in addition to the risk of developing psychological dependence on AI, may replace or significantly reduce the

quality of existing social relationships, thereby undermining adolescent well-being and social development. According to this hypothesis, individuals particularly attracted to digital communication as a compensatory alternative to perceived "difficult" human interactions are also those most likely to adopt such forms of social compensation. These are often adolescents who have already experienced peer-relational difficulties, social anxiety, or family conflict, and who therefore turn more frequently to AI companions to satisfy relational and emotional needs (Sun *et al.*, 2026).

The language used and the tone of voice of AI companions are also not neutral for users and have concrete effects on usage patterns, screen time, and the risk of relational addiction. According to a recent joint study (Kim et al., 2026) conducted by the Department of Psychology, University of Denver (USA), and the Department of Psychology, Ewha Womans University (South Korea), in several widely reported cases in which adolescents died by suicide following prolonged interactions with AI companions, such chat systems appeared to use intimate and validating language, sometimes even aligning with users' negative thoughts. The study involved 284 adolescents aged 11 to 15 and an equal number of parents (total N = 568). Researchers constructed two analogous chatbot-based conversations concerning the same social problem: a student excluded by peers. The content was identical in both conditions, but the chatbot's communicative style differed. The first adopted a relational style, using first-person language and an affective-emotional tone to simulate relational presence. The second adopted a transparent style, explicitly reminding users of its artificial nature and using neutral, non-empathetic language. Results replicated previous findings: parents preferred the transparent style, whereas adolescents preferred the relational style. Notably, adolescents who preferred the relational style reported lower-quality peer and family relationships, as well as higher levels of stress and anxiety, suggesting an increased vulnerability to dependence on AI companions among socially and emotionally at-risk youth.

This preference for relational-style chatbots, which underlies both the potential and risks of AI companions, is largely explained by the human tendency to attribute human-like emotions, thoughts, and intentions to non-human entities. This psychological mechanism is known as anthropomorphism (Epley *et al.*, 2007) and is currently under scrutiny in media discourse and public policy across most European countries in 2026,

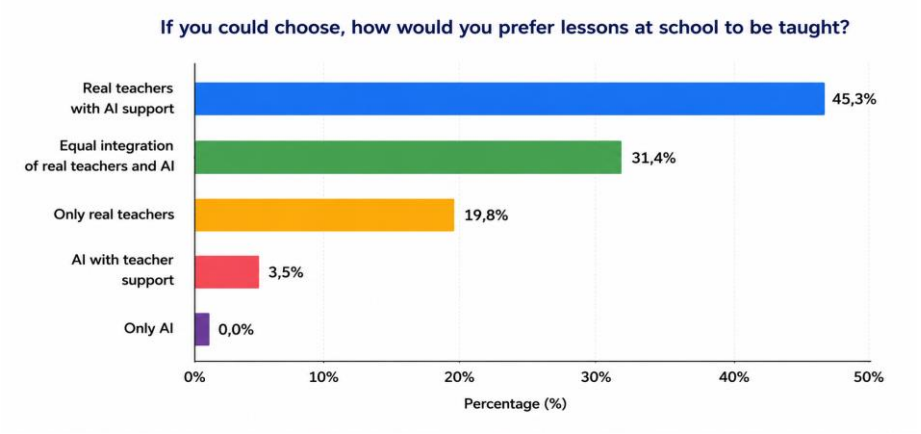
particularly with regard to regulation of AI systems, access control, and legal responsibility. At the same time, screens and artificial intelligence have already deeply entered primary and secondary education, both as e-tivities aimed at developing new competencies within curricular time and as tools supporting learning processes or, as previously noted, as relational substitutes to which increasing numbers of adolescents entrust needs for listening and recognition in non-formal environments such as homes, restaurants, or other social spaces. The educational relationship and the teacher–student dynamic are thus reinterpreted in light of these new practices and habits, between formative tools, educational devices, and emerging relational substitutes. At the core of the survey titled Exposure to Screens and AI lies the investigation of screen exposure time, quality of viewing, and types of digital activities, with particular attention to students' perceptions of the educator's role, the use of artificial intelligence in learning, and the respective roles of AI and teachers in educational mediation.

Regarding the definition of Artificial Intelligence, less than half of respondents (45.9%) selected the correct option among those provided. Concerning screen time, high exposure levels were observed among participating adolescents. National data, such as the Telefono Azzurro (2023) report on daily screen time among adolescents aged 12–18, indicate that 24% of respondents spend at least four hours per day on social media and messaging applications. In the present study, however, the proportion of adolescents with overall screen time—including tablets and television—rises to 33.8% among 17–18-year-olds (with over 8% exceeding seven hours of exposure), while 44.2% of respondents are unable to estimate their daily screen exposure. Regarding perceived screen exposure during a single school lesson, approximately 20% report being rarely or never exposed to screens, while 8.1% report spending the entire lesson in front of a screen (interactive whiteboards, PCs, tablets, etc.). For 11.6% of respondents, screen exposure during a single lesson ranges from 30 to 45 minutes, while for approximately 50% it ranges from less than 15 minutes to 30 minutes.

As for the use of artificial intelligence tools, 100% of the sample reports using AI tools, such as chatbots and image-generation systems, with varying frequency. Approximately one in four adolescents uses generative AI daily, and more than half report using such tools at least once a week. These findings highlight the centrality of AI in Generation Z contexts. Regarding usage purposes, the vast majority of respondents (80%) report using AI for school-related tasks (summaries, explanations, homework). This is

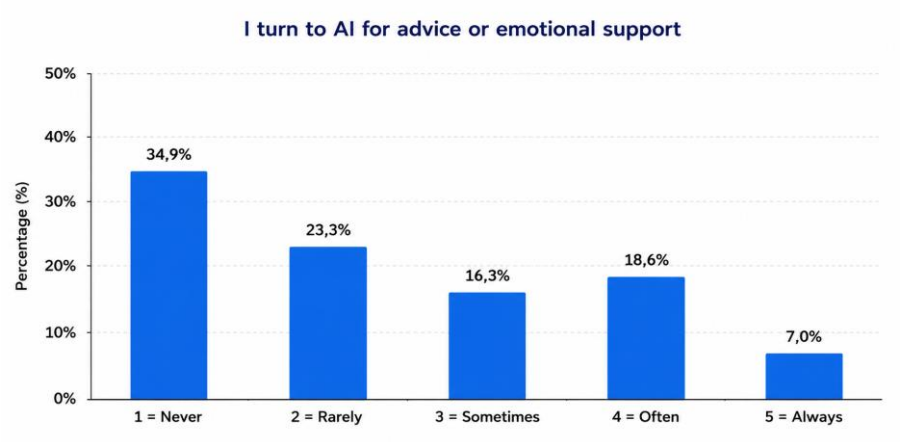
particularly relevant for subsequent findings concerning trust in generative AI and the educational relationship.

94.2% of students place perceived AI reliability between medium and medium-high levels (Likert scale 3–4), indicating generally positive but cautious trust, while maximal trust is marginal (3.5%), as is complete distrust. Another item explores students' perceptions of the didactic effectiveness of generative AI compared to traditional teaching, assessing the extent to which students believe that AI facilitates conceptual understanding more or less than traditional teacher-led instruction. Over 80% of the sample perceives AI-based instruction as effective, to the extent that it is preferred over teacher-only explanations. This perceived effectiveness also reflects a shift from viewing AI as a cognitive support tool to considering it as a potential relational presence with social value. It becomes increasingly necessary to investigate the mechanisms of validation students seek from AI, which are typical of educational relationships grounded in mediation, listening, reciprocal recognition, and intersubjective knowledge construction. The item also examines preference for hybrid teaching models integrating AI, in line with the Technology Acceptance Model (TAM).



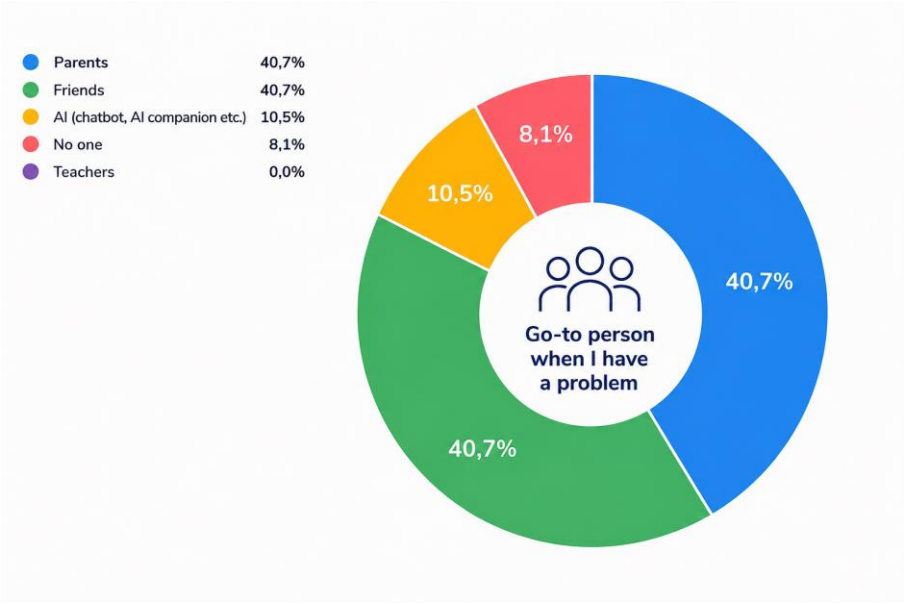
Although none of the respondents preferred virtual teachers over human educators, 3.5% would prefer learning primarily through AI systems with teachers playing a merely supportive role. While the majority prefer real teachers supported by generative AI (over 45%), and 31.4% opt for a

balanced integration between relational and technological components, 19.8% prefer a school environment without AI tools. Regarding the perception and use of AI companions as relational substitutes, data show that nearly one-third of respondents never discuss personal problems or seek personal advice from AI systems. This implies that approximately 65% of adolescents have used AI companions at least once in their lives for emotional support or personal guidance. A minority (7%) uses such systems always for confiding, while the majority uses them less frequently.



It has been essential to investigate adolescents' behavior in situations where they experience overwhelming emotions, sensations, or personal difficulties. This is particularly relevant with respect to reference figures in affective and educational relationships (parents, significant adults, teachers), as well as peer relationships and emerging interactions mediated by AI companions and relational-style chatbots. For the adolescents surveyed, parents and significant adults remain the primary reference point (40%), as do peers (40%). AI companions represent the primary reference for fewer than one in ten adolescents, indicating an emerging but still limited phenomenon in the Italian context. However, the most concerning findings are those related to absences. None of the respondents identified teachers or educators as reference figures in moments of personal difficulty. Notably, 8% report not sharing or communicating their emotional states or personal problems with anyone, indicating suppression or non-

disclosure of psychological distress in the subject's life.



While artificial intelligence is currently perceived by adolescents primarily as a support tool for learning and educational responsibility remains largely attributed to human educators, teachers risk progressively losing ground both in the educational relationship and in their role as mediators of learning needs and mentors in the construction of meaningful student relationships. This calls for a redesign of educational and training models aimed at supporting new generations of education professionals immersed in technologically mediated life experiences. The teacher's role is thus increasingly redefined within hybrid learning environments. If coexistence with increasingly integrated AI systems becomes unavoidable, the greatest challenge is learning how to learn with AI not in a dependent or subordinate way, but as a "generator of the generator" (Iavarone, 2025).

3. Discussion

The research carried out offers a glimpse of a restructuring that goes beyond a mere reorganization of the ways in which knowledge is accessed and produced, and instead affects the very nature of human experience, particularly in cognitive and emotional terms. From an epistemological perspective, a significant shift in the forms of cognitive authority is

emerging. The devices used to legitimize knowledge are tending to shift away from the interpretative and guiding function of human pedagogical mediation towards algorithmic architectures, which are increasingly – and mistakenly – regarded as neutral and self-sufficient entities of undisputed value.

The changes examined here suggest that the educational issue raised by generative artificial intelligence cannot be reduced either to a question of technological innovation or to a mere change in teaching tools. The central issue seems to revolve instead around a fundamental reorganisation of the conditions under which individuals build meaningful relationships and learn, whilst attributing authority to sources of knowledge. The emergence of chatbots and conversational AI systems, capable of producing immediate and adaptive responses, is introducing a new framework for educational mediation, in which algorithms are progressively tending to occupy spaces that were traditionally reserved for human interaction. The data collected in the preliminary study "*Esposizione agli schermi e alle AI"* highlight, within the context under consideration, a generational group aged 17–18 who are fully immersed in digital environments and are already accustomed to viewing artificial intelligence as an ordinary and significant part of their cognitive experience. The high level of trust placed in the responses provided by generative systems and their widespread use for learning purposes – with a significant proportion of teenagers also turning to them for emotional support – paint a picture that does not lend itself to simplistic interpretations. Despite this evidence and a general picture that paints a problematic picture, the role of the teacher does not appear to have been replaced or symbolically undermined, even though it is under increasing pressure – not so much in terms of its role in imparting knowledge, but rather in its ability to maintain an interpretative and emotional-relational presence – in contexts where learning is increasingly envisaged as being closely linked to the use of AI. The constant availability of artificial systems and their suitability for validation make these devices particularly appealing, especially to those experiencing vulnerability and social anxiety – a condition affecting a growing number of adolescents. Overall, there is a risk that AI, from being a tool providing supplementary support for learning, will gradually be assigned educational and emotional functions that far exceed its actual capabilities, thereby replacing conventional role models. A further and distinct cause for concern, however, relates to a significant number of adolescents who, in the context under investigation, instead display a desire for isolation, avoiding interaction with both other people

and digital devices, thereby highlighting the growing prevalence of social and emotional detachment.

4. Conclusions

In light of these findings, we need to explore – through further experimental research and data collection – the conditions that enable us to engage critically with environments increasingly permeated by artificial intelligence, preventing them from becoming our sole means of engaging with the world and thus turning into a cognitive and emotional dependency. Schools and other educational institutions, together with teachers and a diverse range of experts, continue to play an irreplaceable role in this regard; they remain the places and the individuals through whom knowledge can be restored to its dialogical dimension, where uncertainty, doubt and the relationship with complexity can be shared and interpreted collectively. The presence of artificial intelligence in everyday life, particularly in educational contexts, seems set to become even more established. The crucial issue, however, goes beyond the mere dichotomy between opposition and widespread adoption; rather, it concerns the possibility of developing pedagogically and epistemologically sustainable ways of coexistence, capable of preserving the central role of human mediation, so as to curb the dehumanising tendencies of the present age and the possible distortions that arise from them.

References

Allouche, E. (2024). *Transformation numérique de l'éducation, approche systémique et recherche appliquée*. In Médiations & médiatisations, (17), 75-107.

Amadori, G., & Mascheroni, G. (2024). *Situating data relations in the datafied home: A methodological approach*. In Big Data & Society, 11(1), 20539517241234268.

Banks, J. (2024). *Deletion, departure, death: Experiences of AI companion loss.* In *Journal of Social and Personal Relationships*, 41(12), 3547-3572.

Batista, R. M., & Griffiths, T. L. (2026). *A rational analysis of the effects of sycophantic AI*. arXiv preprint arXiv:2602.14270.

Beck, U. (1992). *Risk Society: Towards a New Modernity*. London: Sage.

Beck, U. (2009). *World at Risk*. Cambridge: Polity Press.

Blake, A., Carter, M., & Velloso, E. (2026, April). *Restoration, Exploration and Transformation: How Youth Engage Character. AI for Fun, Feels and Finding themselves*. In *Proceedings of the 2026 CHI Conference on Human Factors in Computing Systems* (pp. 1-19).

Bonetti, A., & Quattrociocchi, W. (2023*). Echo chambers e bolle epistemiche nell'era digitale: le prospettive della data science*. In *Azimuth: philosophical coordinates in modern and contemporary age*: 22, 2, 2023, 43-57.

Carro, M. V. (2024). *Flattering to deceive: The impact of sycophantic behavior on user trust in large language model*. arXiv preprint arXiv:2412.02802.

Cheng, M., Lee, C., Khadpe, P., Yu, S., Han, D., & Jurafsky, D. (2026). *Sycophantic AI decreases prosocial intentions and promotes dependence*. In *Science*, 391(6792), eaec8352.

Decuypere, M., & Vanden Broeck, P. (2020). *Time and educational (re-)forms – Inquiring the temporal dimension of education*. In *Educational Philosophy and Theory*. DOI:10.1080/00131857.2020.1716449.

Epley, N., Waytz, A. & Cacioppo, J. T. (2007). *On seeing human: a three-factor theory of anthropomorphism*. In *Psychological review* 114, 864.

Fang, C. M., Liu, A. R., Danry, V., Lee, E., Chan, S. W., Pataranutaporn, P.,Maes, P., Phang Jason, Lampe M., Lama, A. & Agarwal, S. (2025). *How AI and human behaviors shape psychosocial effects of extended chatbot use: A longitudinal randomized controlled study*. arXiv preprint arXiv:2503.17473.

Fakouri, H., Khodabakhshi, K. A., Majidi, B., & Falsafinejad, M. R. (2026). *The Effectiveness of Artificial Intelligence (AI) Interventions on Students' Rumination and Emotion Regulation: A Systematic Review*. In *International Journal of Body, Mind & Culture* (2345-5802), 13(3), 145.

Feng, X., Tian, L., Ho, G. W., Yorke, J., & Hui, V. (2025). *The effectiveness of AI chatbots in alleviating mental distress and promoting health behaviors among adolescents and young adults: Systematic review and meta-analysis.* In *Journal of Medical Internet Research*, 27, e79850.

Ferrari, S., Triacca, S., & Braga, G. (2021). *Design for learning in the third space: opportunities and challenges*. In *Research on Education and Media*, 13(2), 1-10.

Fondazione S.O.S. Il Telefono Azzurro ETS. (2023). Tra realtà e Metaverso. Adolescenti e genitori nel mondo digitale. https://www.azzurro.it/wp-content/uploads/2023/02/TA_SID23_Dossier-Doxa_web.pdf (consultato il 28/06/2026).

Gutiérrez, K. D. (2008). *Developing a sociocritical literacy in the third space*. In *Reading research quarterly*, 43(2), 148-164.

Herbener, A. B., & Damholdt, M. F. (2025). *Are lonely youngsters turning to chatbots for companionship? The relationship between chatbot usage and social connectedness in Danish high-school students*. In *International Journal of Human-Computer Studies*, 196, 103409.

Iavarone, M. L. (2025). *L'educazione patetica. Tra disorientamento, crisi ed errori educativi del nostro tempo*. FrancoAngeli.

Iavarone, M.L. (2022), *Educare nei mutamenti. Sostenibilità didattica nella transizione tra fragilità e opportunità*, Milano, FrancoAngeli.

Ibrahim, L., Hafner, F. S., Cheng, M., Lee, C., Anselmetti, R., Willer, R., ... & Yang, D. (2026). *Sycophantic AI makes human interaction feel more effortful and less satisfying over time*. arXiv preprint arXiv:2605.07912.

Kim, P., Xie, Y., & Yang, S. (2025). *"I am here for you": How relational conversational AI appeals to adolescents, especially those who are socially and emotionally vulnerable*. arXiv preprint arXiv:2512.15117.

Le Nepvou, A. (2025). *A2. theorizing without theory: Toward a structural diagnosis of epistemic displacement in contemporary science*. DOI:10.5281/zenodo.15626219.

Lingua, G., & Zamengo, F. (2025). *Crisi degli esperti e disintermediazione. Una prospettiva tra filosofia e pedagogia*. In *S&F SCIENZAEFILOSOFIA. IT.*, (34), 80-101.

Li, J., Li, Y., Hu, Y., Ma, D. C. F., Mei, X., Chan, E. A., & Yorke, J. (2025*). Chatbot-delivered interventions for improving mental health among young people: a systematic review and meta-analysis*. In *Worldviews on Evidence-Based Nursing*, 22(4), e70059.

Liu, X., Guo, B., He, W., & Hu, X. (2025). *Effects of generative artificial intelligence on K-12 and higher education students' learning outcomes: A meta-analysis*. In *Journal of Educational Computing Research*, 63(5), 1249-1291.

Mishra, P., & Henriksen, D. (2025). The Curiosity Paradox: How Sycophantic GenAI May Undermine Learning. In TechTrends, 69(6), 1127-1133.

Namvarpour, M., Brofsky, B., Medina, J. Y., Akter, M., & Razi, A. (2026, April). *Understanding teen overreliance on AI companion chatbots through self-reported Reddit narrative*s. In *Proceedings of the 2026 CHI Conference on Human Factors in Computing Systems* (pp. 1-19).

Neugnot-Cerioli, M., (2026*). Adolescents & Anthropomorphic AI: Rethinking Design for Wellbeing An Evidence-Informed Synthesis for Youth Wellbeing and Safety*. arXiv preprint arXiv:2603.06960.

Nowland, R., Necka, E. A., & Cacioppo, J. T. (2018). *Loneliness and social internet use: pathways to reconnection in a digital world?*. In *Perspectives on psychological science*, 13(1), 70-87.

Passeron, E., & Jacovkis J., (2024). *Lo digital no media. La mediación educativa en el territorio digital.* In *Edutec Revista Electrónica de Tecnología Educativa* 87 (87): 1–13. https://doi.org/10.21556/ edutec.2024.8.

Pisano, A. (2025). Il linguaggio 'aletheico'. Tirannia della verità e intelligenza artificiale. In Muller, P.A.M., Bianchi, A., Modugno, A., Monti, P., Sacchi, M.,

Veneziano, R. (a cura di), Sapere di non sapere: nuove sfide della conoscenza tra tradizioni e traduzioni: atti del Convegno nazionale della Società filosofica italiana, 2024, Ledizioni, Milano, pp. 267-272.

Quattrociocchi, W., Capraro, V., & Perc, M. (2025). *Epistemological fault lines between human and artificial intelligence*. arXiv preprint arXiv:2512.19466.

Rowland, J., & Estevens, J. (2025). *"What is your digital identity?" Unpacking users' understandings of an evolving concept in datafied societies*. In *Media, Culture & Society*, 47(2), 336-353.

Stowell, F. (2024). *Digitization and the shaping of society–a soft systems study.* In *Systemic Practice and Action Research*, 37(6), 765-779.

Skjuve, M., Følstad, A., Fostervold, K. I., & Brandtzaeg, P. B. (2021). *My chatbot companion-a study of human-chatbot relationships*. In *International Journal of Human-Computer Studies*, 149, 102601.

Sun, X., Wang, Y., & McDaniel, B. T. (2026). *AI companions and adolescent social relationships: Benefits, risks, and bidirectional influences.* In *Child Development Perspectives, Advance online publication*. DOI: https://doi.org/10.1093/cdpers/aadaf009.

Van Lissa, C. J. (2022). *Mapping phenomena relevant to adolescent emotion regulation: A text-mining systematic review*. In *Adolescent Research Review*, 7(1), 127-139.

Wu, J. (2024). *Social and ethical impact of emotional AI advancement: the rise of pseudo-intimacy relationships and challenges in human interactions.* In *Frontiers in psychology*, 15, 1410462.

Wu, R., & Yu, Z. (2024). *Do AI chatbots improve students learning outcomes? Evidence from a meta-analysis*. In *British Journal of Educational Technology*, 55(1), 10-33.

Wu, Y., Wu, T., Zhu, K., Liu, X., Liu, J., Wang, Y., ... & Du, X (2026). *The Impact of Chatbots on Adolescent Mental Health Development: A Comprehensive Literature Review*. In *Journal of multidisciplinary healthcare*, 19, 579872. https://doi.org/10.2147/JMDH.S579872.

Zhang, F., Zhang, Y., Li, G., & Luo, H. (2023). *Using virtual reality interventions to promote social and emotional learning for children and adolescents: A systematic review and meta-analysis*. In *Children*, 11(1), 41.

Zhang, Y., Zhao, D., Hancock, J. T., Kraut, R., & Yang, D. (2025). *The rise of AI companions: how human-chatbot relationships influence well-being*. arXiv preprint arXiv:2506.12605.

Zhao, Y., Li, Y., Tang, S., Wang, Y., & Zhang, M. (2025). *Parental Technoference and Problematic Media Use in Children: Meta-Analysis.* In *Journal of Medical Internet Research,* 27, e57636.