TECHNO-AESTHETIC EXPERIENCE FOR A CRITICAL AND GENERATIVE RELATIONSHIP WITH AI

Francesca Pileggi
University of Turin
francesca.pileggi@unito.it

Double Blind Peer Review

Citation
Pileggi, F. (2026). Techno-aesthetic experience for a critical and generative relationship with AI. *Italian Journal of Health Education, Sport and Inclusive Didactics, 10*(4).

Doi: https://doi.org/10.32043/gsd.v1i4.1896

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 growing spread of Artificial Intelligence requires training in the ability to critically discern its risks and potential for human development. From this perspective, "non-cognitive" critical-creative skills, rooted in the sensory, emotional, and relational dimensions of the individual, take on particular significance. This paper presents the techno-aesthetic experience – outlining its educational qualities – as a privileged learning context for fostering a critical and generative relationship with AI. This perspective is explored in depth through the workshop on the "augmented inner face", developed as part of the international Action-Research-Formation project *Teachers4Skills*, carried out with a mixed group of 34 pre-service and in-service primary school teachers. The experience highlights the potential of techno-aesthetic practices in fostering the critical-creative skills needed to move the relationship with AI towards enhancing the quality of human and non-human existence.

KEYWORDS
Techno-aesthetic experience; teacher professional development; critical-creative skills; augmented inner face.

Received 2026-07-10
Accepted 2026-10-27
Published 2026-10-30

1. The challenge of AI and the promotion of critical-creative skills

Transversal critical-creative skills are a priority in educational research, playing a decisive role in personal, educational and professional development (Cipriano et al., 2023; Guglielmini & Maccarini, 2026; La Marca, 2026; OECD, 2026b). These skills contribute to integral formation, encompassing practical abilities, value-based attitudes and inner dispositions (Chiosso, 2021; CASEL, 2020), fostering an approach aimed at thoughtful reflection and the regeneration of reality.

Their significance has increased with the rapid pace of technological innovation and the growing pervasiveness of Artificial Intelligence (AI) (Savka et al., 2025; Trapitsyn & Tursynbaeva, 2025). The main international frameworks (Bacigalupo et al., 2016; CASEL, 2020; UNESCO, 2024) recognise the central role of skills related to the *personal-agentive* sphere (resilience, self-awareness, self-regulation, and taking the initiative), the *cognitive* one (critical thinking, creativity, problem-solving, and metacognition), and the *social-relational* one (empathy, cooperation, and social awareness). Together, they enable individuals to approach AI critically, responsibly, and ethically, recognising both its risks and potential.

Risks concern multiple dimensions: the *cognitive* one, with the possible decline of mental effort and intellectual capacities due to excessive reliance on AI systems (OECD, 2026a); the *relational* one, including the anthropomorphisation of machines and attribution of mental or emotional states to them (Festerling & Siraj, 2022); and the *informational* one, involving privacy, personal data circulation, and exposure to unreliable information (Sanchez-Acedo et al., 2024).

Conversely, when approached through a humanising perspective, an early and intentionally guided relationship with AI can foster fundamental human capacities (OECD, 2026b; Ranieri, Biagini, & Cuomo, 2025), particularly within the *critical, creative,* and *social domains. Critically* engaging with AI can strengthen the ability to question and reinterpret reality more profoundly (Guarcello & Pileggi, 2025); instead, from a *creative perspective*, it can enhance expressive and imaginative capacities, encouraging new future scenarios for the planet's well-being from an ecosystem perspective (Carletti, 2025). *Socially*, it can promote conscious forms of interaction and collaboration between humans and AI systems, likely to characterise future educational, professional, and social contexts (WEF, 2026).

Therefore, fostering critical reflection on AI is particularly urgent for younger generations, and teachers should not adopt a passive stance towards technological innovation. In contrast, they should be able to make «choices and sustained efforts [...] to bend the arc of AI implementation towards educational experiences that help all children flourish academically, socially, and civically» (Burns et al., 2026, p. 10).

From this perspective, promoting the skills required for a critical and responsible relationship with AI should primarily involve teachers, both in initial and continuing education (Elbertson, Jennings, & Brackett, 2025; Tódor et al., 2025). Through their educational role and their personal and experiential background, teachers shape relationships within the broader educational community. The quality of these relationships and the broader school environment are recognised as main factors influencing students' skills development (Guglielmini & Maccarini, 2026).

Since these skills extend beyond the cognitive domain and are rooted in human sensitive, emotional, reflective, imaginative, moral, creative, and spiritual

dimensions, their formation requires approaches that move beyond exclusively technical or logical-argumentative models. Skills «cannot be reduced to code», since they express «our consciousness, our capacity to navigate complex relationships, to exercise ethical judgement in uncertainty, to create something genuinely new» (OECD, 2026b, p. 6). They are essential for cultivating positive relationships with oneself and with others, fostering discernment and critical reflection on present and future challenges from a transformative perspective (Burns et al., 2026).

Because these skills are grounded in human sensitivity, their formation should engage the subject as a whole, both as an individual and as a citizen. Within this perspective, aesthetic experiences – according to the specific interpretation of the "techno-aesthetic" (Montani, 2014; Simondon, 2017) – become significant, as they foster meaningful learning while enabling educational practices to be rethought considering technological innovation. Such innovation should ultimately serve the development of distinctively human capacities – nurturing a deeper relationship with one's own inner self and with that of others – to promote a critical, responsible, and generative relationship with AI.

The aim of this theoretical-conceptual study is to outline and propose a techno-aesthetic educational framework for the critical-creative skills needed to engage with AI and to explore it through a pilot case study on the augmented "inner face". It addresses two research questions:

- RQ1: What are the qualities of an educational techno-aesthetic experience that fosters critical-creative skills needed for a critical and generative relationship with AI?
- RQ2: What kind of techno-aesthetic educational experience can contribute to fostering a critical and generative relationship with AI?

2. The aesthetic experience and the formation of human sensitivity

Given the sensitive nature of the skills that urgently need to be developed to promote a critical and creative relationship with AI, educational processes should foster their formation through an embodied, reflective, and creative relationship with reality and AI itself.

From this perspective, aesthetic processes represent the experiences capable of awakening and exercising human sensitivity, understood as "*aisthesis*" (Berleant, 2010; Dewey, 1934; Montani, 2014), as particularly highlighted in John Dewey's seminal work.

In *Art as Experience* (1934), Dewey describes aesthetic experience as an act of «perception and enjoyment» (Dewey, 1934, p. 46), through which the individual actively interprets and enriches environmental stimuli.

In *Perception and Organic Action* (1912), "perception" is described as the «process of determining the indeterminate» (Dewey, 1912/1979, p. 13), through which the subject chooses and selects, according to one's own interests, «the parts of the world upon which the organism is interested to act» (Dewey, 1912/1979, p. 15). Perception is therefore not an "immediate" act, but a process through which individuals gradually qualify the material of their lived and embodied *world*, namely ordinary experience.

This process of distinguishing and selecting quality unfolds through the authentic act of feeling (Dewey, 1930) in relation to reality, constituting an analytical interpretation distinct from purely intellectual thought and "mechanical" mental operations. Through this process, subjects generate aesthetic energies, which do not "find issue in any single or specific form" (Dewey, 1925/1954, p. 29), but contribute to raising the overall level of

everyday existence, paving the «way for a subsequent action» (Dewey, 1912/1979, p. 15) aimed at transforming reality.

According to Dewey, alongside perception, there is *enjoyment*, that is the aesthetic appreciation and the act of attributing value and meaning from the consideration of the aesthetic object. To take an example, in *Affective Thought in Logic and Painting* (1926), the act of appreciating a specific work – such as a painting, the «educational means» par excellence (Dewey, 1926/1929, p. 72) – characterised by an unusual style compared to that to which the subject is usually accustomed, initially produces a «jar of dissonance with the superficial habits most readily called into play» (Dewey, 1912/1979, p. 68). Yet this discontinuity, once reworked through a gradual perceptual remodulation, initiates a more general reorganisation of perception itself in the subject, becoming that «fully harmonized experience as sets a standard or forms a habit for all other experiences» (Dewey, 1912/1979, p. 72). Indeed, the individual needs to reconsider one's habitual interpretations, giving new meanings to the aesthetic object in question (Dewey, 1926, 1937).

From this perspective, painting is the privileged space in which «aesthetic perception, together with an *operative* perception of the efficiencies of the aesthetic object» occurs (Dewey, 1925/1954, p. 29). This is developed through the primary appreciation of the dominant and pervasive quality of the object – the complex, undetermined quality – which constitutes «background, the point of departure, and the regulative principle of all thinking» (Dewey, 1930/1931, p. 116) and which the subject gradually selects through a personal approach. Aesthetic experience, therefore, consists in the ability to perceive «the integrated relation of all constituent parts in forming a whole» (Dewey, 1937/2008, p. 524).

By attributing meaning to works of art, individuals develop criteria for judgement that orient both their ways of inhabiting the world and their relationships with others. Aesthetic experience thus becomes a fundamental educational device for the formation of subjects capable of interpreting, evaluating, and creatively transforming reality.

3. The path of “techno-aesthetics”: a pedagogical interpretation

At the international level, teacher education programmes aimed at fostering teachers' critical-creative skills for the development of a critical and responsible relationship with AI pay limited attention to the “non-cognitive” nature of these skills, remaining predominantly grounded in cognitive-rational and technical-operational approaches (Kalymova et al., 2026). In this context, quality aesthetic approaches capable of engaging teachers with AI through their questions, curiosities, and personal experiences remain largely marginal, limiting the formation of the human “sensitive” dimension (Bertin, 1974; Dewey, 1934) and encounters with one’s inner self through dialogue with others (de Moya Martínez & Syroyid Syroyid, 2021). Yet these elements are crucial to teachers' personal and professional self-awareness and to a reflective and creative relationship with AI.

Overcoming these limitations requires educational experiences that actively involve teachers, supporting their personal and emotional well-being while enabling them to *make sense* of the interweaving of existential and professional aspects. Teachers are therefore able to recognise the deeper motivations underlying their actions and, consequently, to redefine their relationship with reality and with AI.

Aesthetic experiences, understood in their specific techno-aesthetic dimension, offer educational potential for the formation of critical-creative skills aimed at fostering a critical and responsible relationship with AI. Consistent with the conception of the "aesthetic" as an act of perceiving and appreciating the quality of artefacts, they concern the relationship established with the artefacts intentionally created by human beings (Simondon, 2017a; Weigelt, 2025).

Human beings have never limited themselves to inventing purely functional tools, seeking to move beyond the merely material and utilitarian dimension of reality by "creating aesthetically overdetermined *objects*, ornaments, pleasing and beautiful artefacts that possess value in themselves, regardless of their practical function" (Buzzi, 2025, p. 113, my trans.). Their value lies in becoming a *generative space* that makes visible the intentionality that produced them and enables continuous experience reinterpretation and renewal.

An emblematic example is provided by prehistoric cave paintings (Buzzi, 2025), created through rudimentary techniques using natural materials available in the surrounding environment. They enabled human beings to leave a lasting trace of their existence, opening the community to artistic experience and expanding capacities for perception, abstraction, and representation of the human reality itself (Wood, 2017). Likewise, the Eiffel Tower represents a modern example of technical, scientific, and humanistic inventiveness integrated within the humanised landscape (Simondon, 2017b).

These artefacts may therefore be defined as techno-aesthetic "containers": open and dynamic spaces that invite interaction while enabling subjects' capacity for *perceiving* meaning and for practical *action*. Rather than offering fixed interpretative keys, they remain available for reinterpretation and reconfiguration by every subjectivity (Buzzi, 2025; Mandoki, 2007). Following

Gilbert Simondon, perception in the encounter with the techno-aesthetic artefact – the container – may therefore be understood as an active and transformative form of contemplation, in which operativity modulates and amplifies what is perceived (Simondon, 2017b, 2025).

Accordingly, techno-aesthetic experience offers a space for critical-creative action in which the educational interweaving of theory and praxis becomes tangible (Dewey, 1934; Liotta, 2025). The techno-aesthetic space, as an «operative and sensitive» space (Cecchi, 2014, p. 18, my trans.), is «aesthetically powerful» (Macrì, 2023, p. 174, my trans.) because it enables subjects to perceive and imagine the latent possibilities of techno-aesthetic containers (Dewey, 1934).

For this educational potential to be effectively realised – since not every techno-aesthetic experience is, in itself, educational – it is necessary to define its specific and essential *qualities* that can intentionally guide educational design. These ontological-pedagogical *qualities* (Bertin, 1974; Thomasson, 2004) constitute the framework that shapes its horizon of *meaning*, its purpose: namely, the formation of critical-creative skills for a critical and responsible relationship with AI and its *educational objectives*, defined according to the characteristics, needs, and learning pathway of each subject.

4. The qualities of the techno-aesthetic educational experience

Building on the need to define the structure of techno-aesthetic experience as an educational one, it is possible to identify four main qualities that intertwine to give shape to a specific internal processual dynamic: *material engagement, productive evaluation, interactivity,* and *aesthetic koiné* (see Figure 1).

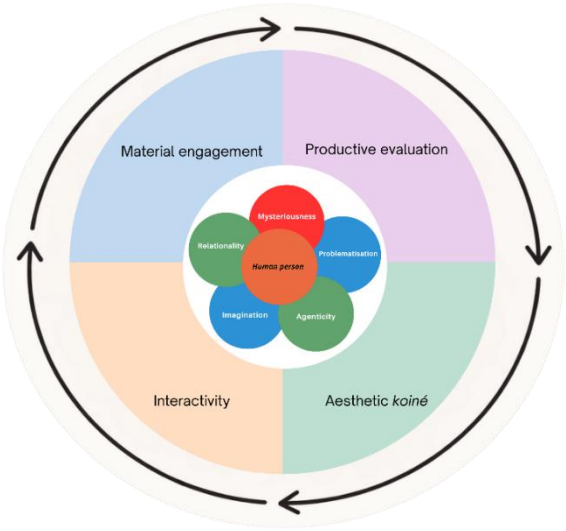


Figure 1: The qualities of the techno-aesthetic educational experience

This dynamic unfolds within a training programme designed as an opportunity for a sensitive relationship with techno-aesthetic containers and for a progressive development of subjects' capacity to critically, creatively, and intersubjectively reinterpret reality and the challenges posed by AI.

The first quality, *material engagement*, concerns the person's involvement in a "face-to-face" relationship with the techno-aesthetic container (Binda, 2020; Coccimiglio, 2023; Montani, 2020), emerging from the encounter between human agency and the agency of the container itself (Casalbore, 2025; Highmore, 2010). Although intentionally created by humans, the container "is not merely extended substance" (Mortari, 2017, p. 32, my trans.); rather, it possesses its own vitality (Latour, 1992; Mortari, 2017; Pirandello, 2024), which continually attracts and sustains the attention of the individual who encounters it (Diodato & Aimo, 2021; Montani, 2014). Material engagement unfolds in the

contingent of the here and now through an intrinsically unpredictable process (Montani, 2014; Perullo, 2020), depending on the subject's personal experience, perceptual engagement, and concerns, through which «the truth of quality [...] emerges in the encounter» (Perullo, 2020, p. 147, my trans.). It involves an initial, selective, free, and responsible perception of the dominant quality of the techno-aesthetic container, guided by the subject's immediate inner *resonance* (Bertinetto, 2023).

The second quality, *productive evaluation*, concerns the capacity to engage with the techno-aesthetic container, *making it more complex* by adopting a *research-oriented approach* and ultimately formulating a *personal, critical perspective* on it (De Bartolomeis, 2022; Guerra, 2019). Through observation, documentation, the comparison of sources, and the rework, the techno-aesthetic container becomes a cultural "pre-text" which activates both the cognitive and emotional engagement of the subject in the progressive formation of one's own identity. As Francesco De Bartolomeis (1989a, 1989b) highlights, even «a work initially perceived as distant and inaccessible» may become understandable and open to reinterpretation through the development of «personal solutions» (De Bartolomeis, 2022, p. 95, my trans.). As a result, the individual becomes both an *art critic*, capable of analysing artistic expressions, their historical evolution and underlying intentions, and a *producer of art*, developing a stylistic identity through affinity or dissonance with the containers encountered. This process fosters the development of one's own «fantastic inventio» and «original expressive dignity» (Malavasi, 2021, p. 27, my trans.), fundamental for human fulfilment.

The third quality, *interactivity*, concerns the promotion of the human capacity to expand the potential for meaning and action (*affordances*) of the techno-aesthetic container (Dewey, 1934; Montani, 2014, 2020, 2025). In particular,

cooperative spaces supported by digital and AI technologies (Montani, 2025), when structured through reflective and critical learning pathways and not excessively hetero-directed, can foster transformative forms of educational interactivity (Macrì, 2023). This process requires the prior exercise of controlled, active, and immersive attention (Citton, 2018; Montani, 2025) capable of guiding the selection of those elements of the experience deemed important and of initiating a «structural imaginative exchange with matter» (Pirandello, 2024, p. 45). From this exchange, new categories and cognitive paradigms emerge (Bertinetto, 2023; Carboni, 2016; Montani, 2020, 2025), which generate a *surplus* of reality (Gadamer, 2000) and question established cultural frameworks (Abbate, 2022; Ramírez, 2020), nurturing new processes of dialogue and community exchange.

The fourth quality, *aesthetic koiné*, denotes that sense of initial sensitive commonality between human and non-human creatures (Freedberg & Gallese, 2007; Gallese, 2026; Pinotti, 2008, 2011). The encounter with the techno-aesthetic container can activate empathic responses (Freedberg & Gallese, 2007), which constitute the basis for the development of intersubjectivity (Cappuccio, 2008), where recognition of the others and their feelings occur through processes of decentering and defamiliarisation of one's own gaze (Hu & Huang, 2025). This intersubjectivity is not understood as unanimity of perspectives (Clemente, 2022; Feyles, 2016), but as a relationship enabling «seeing together how *the same is expressed in different forms*, in the unique nuances of each person» (Bellingreri, 2019, p. 57, my trans). Within this framework, AI and immersive technologies may extend this relational horizon towards new forms of sensitive co-feeling (Pinotti, 2011) involving both human and non-human beings (Hu & Huang, 2025).

The four reconstructed qualities provide guidelines for the design of techno-aesthetic experiences aimed at developing the personal, reflective, and socio-relational skills essential for cultivating a critical-creative approach to AI technologies.

5. Educational practices for the relationship with AI: the case of the augmented “inner face”

A significant domain for designing techno-aesthetic educational experiences fostering a critical and conscious relationship with AI is the poetic-artistic dimension. It enables individuals to encounter their own «*original feeling*» (Del Bello, 2023, p. 280) towards the self and a reality increasingly shaped by AI, fostering a genuinely lived, conscious, and generative relationship with technology.

Within this perspective, the practice of representing and contemplating the augmented “inner face” (Zambrano, 2013) is especially significant for fostering the critical-creative skills required for the relationship with AI. The creation of the augmented inner face, using AI, goes far beyond the representation of an individual's outward appearance, representing a particularly meaningful opportunity to grasp «the person's essence, with its complex range of feelings» (De Bartolomeis, 2022, p. 66, my trans.) which characterises the dynamism of the life of its «soul» (Del Bello, 2023, p. 280).

5.1 Method

Building on this framework, a training programme in the international *Teachers4Skills* project of collaborative Action-Research-Formation was

designed and implemented (Prud'homme, Dolbec, & Guay, 2011; Zecca, 2018). Funded by the Association for Moral Education SID Grant 2024, the project involved a convenience sample consisting of 34 teachers – 18 in-service teachers and 16 pre-service teachers enrolled in the Primary Teacher Education programme at the University of Turin – during the 2024/2025 and 2025/2026 academic years. The educational pathway consisted of two complementary phases: *theoretical* and *experiential*.

The *theoretical phase* focused on exploring the main classifications of critical-creative skills in the educational context, developed in relation to AI. This activity was followed by a process of critical deconstruction and reconstruction of these frameworks, aimed at overcoming their technical, operational, and efficiency-oriented perspective. Indeed, it highlighted their educational potential for human formation and for cultivating a critical and generative approach to the challenge of AI.

The *experiential phase* consisted of a workshop centred on the *augmented inner face through AI*, co-designed with two teachers involved in the project and carried out over a full day. Eighteen participants completed pre- and post-intervention questionnaires with both closed and open-ended questions, analysed through content analysis (Schreier, 2012). All participants provided informed consent and audio/visual waivers. Data were processed through text segmentation, category framework building, dataset coding, and interpretation of key themes. To ensure reliability, two researchers independently coded the data (Zhang & Wildemuth, 2005) until consensus was reached.

During the morning session, teachers adopted a "pure" perspective (Parente, 2021) to welcome the enchantment of the augmented inner face and «what is revealed through its invisible magic» (Zambrano, 1945/2013, p. 19). To this end, expressive activities such as reading literary passages, picturebooks,

identity reflection, paired visual collages, autobiographical writing, music-based self-exploration, and group discussion on AI were proposed. These activities inspired *perceptive-interpretative sensitivity* for self-awareness and a generative relationship with AI.

During the afternoon session, participants created their own self-portrait using *analogue drawing*, first in pairs and then individually, drawing with their non-dominant hand and with their eyes closed. This technique privileged the expression of personal feelings and experiences over fidelity to the outward resemblance of the portrait (De Bartolomeis, 1990, 2022).

Participants then recorded a short *video* expressing their representative *inner qualities* through natural elements. Subsequently, integrating these videos with drawings through the Artivive AI platform (which leverages cloud-based image recognition), they generated an augmented artefact that rendered visible dimensions of the inner self otherwise inaccessible through traditional artistic languages alone, fostering a synesthetic interplay of languages.

The workshop subsequently became an opportunity for collective reflection and dialogue on AI, encouraging participants to move beyond the view of AI as a mere tool for the sometimes indiscriminate production of content. Instead, AI was explored as a technology capable, when employed to support the humanisation of the individual rather than as a substitute, of expanding subjects' critical, creative, and relational capacities.

This pathway contributed to an embodied and relational understanding of AI, enriching participants' professional repertoires through methodological resources and collective reflection on core issues of AI debate (e.g., authorship of AI-generated works, copyright, and deepfakes). When critically reinterpreted and adapted to class group’s interests and developmental stages,

these themes can support philosophical dialogue and ethical inquiry toward responsible AI engagement.

5.2 Findings and Discussion

A comparative analysis of pre- and post-intervention responses showed increased selection frequencies for key skills within the relationship with AI: *capacity to take the initiative within one's own community* (from 5 to 12), *empathy* (from 13 to 18), and *collaboration* (from 10 to 13).

These findings are consistent with the responses to the open-ended question concerning the collective sharing of the experience, from which three main themes emerged through the qualitative content analysis: *recognising a shared humanity* (30 occurrences), *consciously deepening self-understanding* (17 occurrences) and *clarifying one's own lived experience to oneself and to others* (10 occurrences).

The *first theme* concerns participants' recognition of their own uniqueness while simultaneously discovering a sense of shared humanity through the experience of “mirroring” themselves in others. Listening to different perspectives on the techno-aesthetic experience and on the impact of AI in everyday and educational contexts helped participants to move beyond feelings of personal and professional “isolation”, as they felt understood, “seen”, and “recognised” in relation to their uncertainties, curiosities, questions, and vulnerabilities concerning AI. Following the workshop, these dimensions were no longer perceived as weaknesses, but as valuable starting points for dialogue and collective reflection, supporting the development of a more conscious and responsible relationship with AI («*sharing one's experience with others allows us to become more aware of it. Moreover, sharing has the*

great power of helping us realise that we are not alone and, above all, of ensuring that we do not feel alone»).

The *second theme* concerns the participants' perceived deepening of self-understanding through the experience of "AI-augmented" self-expression undertaken together with others. The experience supported participants in approaching previously unexplored inner aspects related to their own core of mysteriousness, encouraging reflection on the relationship between human beings and AI technologies and on technology's historical role in the evolution and expansion of human capacities («*it can help us to know ourselves better through listening to others and engaging in dialogue, allowing us to open doors to our 'inner self' that would otherwise remain hidden*»).

Finally, the *third theme* highlights the further reinterpretation and clarification of participants' lived experience through the integration of verbal, visual, musical, and digital expressive languages mediated by AI, which facilitated a clearer and more meaningful sharing of personal experience within the group («*during the workshop [...] the creative activities made it possible to give form to thoughts and emotions that often remain unheard or confused*»).

Taken together, these findings highlight how the augmented inner face workshop encouraged a critical and generative relationship with AI by promoting critical-creative skills associated with the *personal-agentive*, *reflective,* and *socio-relational* dimensions to engage with AI starting from one's own experience. Creating, sharing, and collectively contemplating the augmented inner faces facilitated participants in recognising both individual uniqueness and the value of their differences, while gradually cultivating a shared sense of "we" capable of orienting the present and future development of AI towards the enhancement of human flourishing.

6. Conclusion

The recognition of “non-cognitive” skills associated with the human sensible dimension as essential for a critical and generative relationship with AI calls for reconsidering teacher education models, which still show limitations in addressing these dimensions.

While serving as an exploratory pilot study based on a convenience sample and self-reported measures, this work suggests the educational value of systematically integrating imaginative self-representation practices (Milne, 2004), here reinterpreted through AI augmentation, into teacher education.

The “augmented inner face” can represent a meaningful techno-aesthetic educational experience capable of fostering a critical and generative relationship with AI by activating processes of introspection, reflection, and dialogue through an immediate and sensible relationship with technology. Through this experience, teachers deepen personal and professional self-awareness while enriching their methodological repertoire, which can be critically reinterpreted and adapted to different educational contexts through collaborative reflection and pedagogical inquiry.

From this perspective, techno-aesthetic educational experiences become spaces where teachers explore, through AI augmented reality technologies, their inner world, shaped by those «fundamental personal attitudes, ideal orientations, and normative principles» (Bellingreri, 2019, p. 89, my trans.) that characterise the uniqueness of every person.

These dimensions influence everyday educational practice (Hancheruk, McBride, & Witczak, 2016; Holappa et al., 2022; Sefton & Sirek, 2020), promoting authentic educational relationships that enable younger

generations to recognise their own nuances and singularity, their aspirations for transforming themselves and reality, and a shared sensibility between human and non-human beings.

References

Abbate, F. (2022). Ed-humanizing techsocieties: Keeping imaginative education alive. *Formazione & Insegnamento, 20*(1), 169–178.

Asquini, G. (Ed.). (2018). *La ricerca-formazione: Temi, esperienze, prospettive*. FrancoAngeli.

Bacigalupo, M., Kampylis, P., Punie, Y., & Van den Brande, G. (2016). *EntreComp: The entrepreneurship competence framework*. Publications Office of the European Union. https://doi.org/10.2791/593884

Bellingreri, A. (2019). *La consegna*. Scholé.

Berleant, A. (2010). *Sensibility and sense: The aesthetic transformation of the human world*. Imprint Academic.

Bertin, G. V. (1974). *L'ideale estetico*. La Nuova Italia.

Bertinetto, A. (2023). Il senso estetico dell'abitudine. *I Castelli di Yale Online: Annali di Filosofia, 11*(1), 31–57.

Binda, E. (2020). Per un'educazione tecno-estetica: Pratiche e riflessioni. *Pólemos, 1*(2), 261–272.

Burns, M., Winthrop, R., Luther, N., Venetis, E., & Karim, R. (2026). *A new direction for students in an AI world: Prosper, prepare, protect*. Center for Universal Education at Brookings.

Buzzi, E. (2025). La questione della tecnica. In E. Buzzi & P. Priori (Eds.), *Educazione e nuove tecnologie: La questione dell'umano* (pp. 105–132). Itaca.

Cappuccio, M. (2008). Empatia e neuroni specchio: Dalle neuroscienze cognitive alla Quinta Meditazione cartesiana. *Rivista di Estetica*, 43–65.

Carboni, M. (2016). Insegnare l'arte: Tre istanze. In D. Guastini & A. Ardovino (Eds.), *I percorsi dell'immaginazione: Studi in onore di Pietro Montani* (pp. 315–324). Pellegrini.

Carletti, C. (2025). Il contributo dell'intelligenza artificiale (IA) al rinnovamento ecologico globale: Un approccio critico-riflessivo per un futuro sostenibile. In G. Gola & A. Gramigna (Eds.), *Progettare futuri possibili: Pluralismo dei paradigmi e tras-formazione* (pp. 121–130). Pensa MultiMedia.

Casalbore, A. (2025). *Narrare attraverso "cento linguaggi": Il kamishibai come spazio di mediazione interculturale*. RomaTrE-Press.

Cecchi, D. (2014). Introduzione. In D. Cecchi (Ed.), *John Dewey: Esperienza, natura e arte* (pp. 7–19). Mimesis.

Cecchi, D. (2025). Experimenting experience: John Dewey, aesthetics and education. *Syzetesis, 12*, 145–170.

Chiosso, G. (2021). Tra cognitive skills e non cognitive skills. *Rassegna CNOS, 3*, 63–71.

Cipriano, C., Strambler, M. J., Naples, L. H., Ha, C., Kirk, M., Wood, M., Sehgal, K., Zieher, A. K., Eveleigh, A., McCarthy, M., Funaro, M., Ponnock, A., Chow, J. C., & Durlak, J. (2023). The state of evidence for social and emotional learning: A contemporary meta-analysis of universal school-based SEL interventions. *Child Development, 94*(5), 1181–1204.

Citton, Y. (2018). *The ecology of attention*. Polity Press.

Clemente, A. (2022). Aesthetic sensitivity: Origin and development. In M. Skov & M. Nadal (Eds.), *The Routledge international handbook of neuroaesthetics* (pp. 240–253). Routledge.

Coccimiglio, C. (2023). Invenzione e riscrittura di forme brevi: Chiavi di lettura tra tecno-estetica e didattica della scrittura. *Graphos, 2*(1), 23–34.

Collaborative for Academic, Social, and Emotional Learning. (2020). *What is the CASEL framework?* https://casel.org/fundamentals-of-sel/what--is-the-casel-framework/

De Bartolomeis, F. (1989a). Un metodo di valutazione produttiva per la conoscenza dell'arte contemporanea. In *Il sapere dell'immagine: Arte contemporanea e scuola* (pp. 31–39). La Nuova Italia.

De Bartolomeis, F. (1989b). Linee di un corso di aggiornamento sull'arte contemporanea per il rinnovamento dell'educazione artistica. In *Il sapere dell'immagine: Arte contemporanea e scuola* (pp. 187–194). La Nuova Italia.

De Bartolomeis, F. (1990). *Il colore dei pensieri e dei sentimenti: Nuove esperienze d'educazione artistica*. La Nuova Italia.

De Bartolomeis, F. (2022). *I bambini, l'arte, la cultura*. Zeroseiup.

de Moya Martínez, M. d. V., & Syroyid Syroyid, B. (2021). Music as a tool for promoting environmental awareness: Experiences of undergraduate education students on the production of video tales in the COVID-19 pandemic. *Education Sciences, 11*(10), Article 582.

Del Bello, S. (2023). The relational dimension of the person in María Zambrano's philosophy. *Church, Communication and Culture, 8*(2), 267–284.

Dewey, J. (1929). Affective thought in logic and painting. In A. C. Barnes, L. Buermeyer, T. Munro, P. Guillaume, M. Mullen, & V. De Mazia (Eds.), *Art and education* (pp. 63–72). Barnes Foundation Press. (Original work published 1926).

Dewey, J. (1931). Qualitative thought. In *Philosophy and civilization* (pp. 93–116). Minton, Balch & Company. (Original work published 1930).

Dewey, J. (1934). *Art as experience*. Minton, Balch & Company.

Dewey, J. (1954). Experience, nature and art. In *Art and education: A collection of essays* (pp. 22–31). Barnes Foundation Press. (Original work published 1925).

Dewey, J. (1979). Perception and organic action. In J. A. Boydston (Ed.), *The middle works of John Dewey* (Vol. 7, pp. 7–30). Southern Illinois University Press. (Original work published 1912).

Dewey, J. (2008). The educational function of a museum of decorative arts. In J. A. Boydston (Ed.), *The later works of John Dewey* (Vol. 11, pp. 520–525). Southern Illinois University Press. (Original work published 1937).

Diodato, R., & Aimo, L. (2021). *Un'idea di educazione estetica*. Scholé.

Elbertson, N. A., Jennings, P. A., & Brackett, M. A. (2025). The role of educators in school-based social and emotional learning. *Social and Emotional Learning: Research, Practice, and Policy, 6*.

Festerling, J., & Siraj, I. (2022). Anthropomorphizing technology: A conceptual review of anthropomorphism research and how it relates to children's engagements with digital voice assistants. *Integrative Psychological and Behavioral Science, 56*, 709–738.

Feyles, M. (2016). Inter-mediazioni: Estetica e fenomenologia del «tra». *Rivista di Estetica, 63*(3), 130–148.

Freedberg, D., & Gallese, V. (2007). Motion, emotion and empathy in aesthetic experience. *Trends in Cognitive Sciences, 11*(5), 197–203.

Gadamer, H.-G. (2000). *Verità e metodo*. Bompiani. (Original work published 1960).

Gallese, V. (2026). *Il sé digitale: Dai neuroni specchio alla mediazione tecnologica*. Raffaello Cortina.

Guarcello, E., & Pileggi, F. (2025). Educare a una gestione responsabile dell'IA: Dalle "domande generatrici" al curricolo critico-etico nella scuola primaria. In F. I. Ambra et al. (Eds.), *Confini educativi tra generazioni: Un giubileo per l'educazione. Atti del Convegno Nazionale CIRPED* (pp. 72–80). Pensa MultiMedia.

Guerra, M. (2019). *Le più piccole cose: L'esplorazione come esperienza educativa*. FrancoAngeli.

Guglielmini, G., & Maccarini, A. M. (Eds.). (2026). *Competenze per la vita: Ricerca, pratiche e politiche per lo sviluppo delle competenze socio-emotive*. Il Mulino.

Hancheruk, H., McBride, J., & Witczak, K. (2016). Re-locating the self: Portraiture for teacher professional growth. *LEARNing Landscapes, 9*(2), 285–302.

Highmore, B. (2010). *Bitter after taste: Affect, food and social aesthetics*. Routledge.

Holappa, A., Lassila, E. T., Lutovac, S., & Uitto, M. (2022). Vulnerability as an emotional dimension in student teachers' narrative identities told with self-portraits. *Scandinavian Journal of Educational Research, 66*(5), 893–906.

Hu, B. A., & Huang, D. (2025). *Designing-with more-than-human through human augmentation* [Preprint]. arXiv.

Kalymova, A., Lepeshev, D., Stukalenko, N., Argimbayeva, A., & Mazhitova, S. (2026). Model of formation of digital competences of future teachers in the conditions of integration of e-learning and artificial intelligence technologies. *Journal of Curriculum Studies Research, 8*(1), 364–387.

La Marca, A. (2026). *Competenze trasversali a scuola: Processi e strategie*. Pensa MultiMedia.

Latour, B. (1992). Where are the missing masses? The sociology of a few mundane artifacts. In W. E. Bijker & J. Law (Eds.), *Shaping technology/building society* (pp. 225–258). MIT Press.

Liotta, E. (2025). Aesthetic education between talents, educational poverty and meritocratic fiction: L'educazione estetica tra talenti, povertà educative e finzione meritocratica. *Formazione & Insegnamento, 23*(S1), 21–27.

Macrì, S. (2023). Arte e interattività: Per un'estetica dei sistemi. *Philosophy Kitchen – Rivista di Filosofia Contemporanea*, (18), 165–178.

Malavasi, P. (2021). Connaissance ignorance mystère: L'educazione, apprendre à vivre. *Studi sulla Formazione, 24*, 21–30.

Mandoki, K. (2007). *Everyday aesthetics: Prosaics, the play of culture and social identities*. Ashgate.

Milne, W. M. (2004). The use of reflective artmaking in pre-service education. *Mentoring & Tutoring: Partnership in Learning, 12*(1), 37–52.

Montani, P. (2014). *Tecnologie della sensibilità: Estetica e immaginazione interattiva*. Raffaello Cortina Editore.

Montani, P. (2020). *Emozioni dell'intelligenza: Un percorso nel sensorio digitale*. Meltemi.

Montani, P. (2025). *Vita interactiva: Da Homo sapiens all'universo digitale*. Einaudi.

Mortari, L. (2017). *La materia vivente e il pensare sensibile: Per una filosofia ecologica dell'educazione*. Mimesis.

OECD. (2026a). *OECD digital education outlook 2026: Exploring effective uses of generative AI in education*. OECD Publishing.

OECD. (2026b). *Reimagining teaching in an accelerating world: International summit on the teaching profession*. OECD Publishing.

Parente, L. M. G. (2021). Desde la mirada de María Zambrano: Entre la imagen pictórica y la razón poética. *Bajo Palabra, 25*, 77–100.

Perullo, N. (2020). La percezione aptica per un'estetica ecologica. *Aesthetica Preprint*, (114), 137–151.

Pinotti, A. (2008). Neuroestetica, estetica psicologica, estetica fenomenologica: Le ragioni di un dialogo. *Rivista di Estetica, 37*, 147–168.

Pinotti, A. (2011). Questione di carattere: Empatia, espressione, analogia. *Rivista di Estetica, 48*, 133–151.

Pirandello, S. (2024). Images like me: Material engagement, operative images, imagin-actions. *AN-ICON: Studies in Environmental Images, 3*(2), 36–55.

Prud'homme, L., Dolbec, A., & Guay, M.-H. (2011). Le sens construit autour de la différenciation pédagogique dans le cadre d'une recherche-action-formation. *Éducation et Francophonie, 39*(2), 165–188.

Ramírez, M.-T. (2020). Aesthetical ontology, ontological aesthetics: Rethinking art and beauty through speculative realism. *Rivista di Estetica, 74*, 201–216.

Ranieri, M., Biagini, G., & Cuomo, S. (2025). AI literacy in higher education: A systematic approach to questionnaire development and validation. *International Journal of Digital Literacy and Digital Competence, 16*(1), 1–25.

Sanchez-Acedo, A., Carbonell-Alcocer, A., Gertrudix, M., & Rubio-Tamayo, J.-L. (2024). The challenges of media and information literacy in the artificial intelligence ecology: Deepfakes and misinformation. *Communication & Society, 37*(4), 223–239.

Savka, I., Yakymovych, T., Ruziak, T., Kozlovskyi, P.-V., Turchyn, I., & Holiiad, I. (2025). Future teachers' digital skills development through professional and vocational training in informal education. *The New Educational Review, 79*(1), 191–207.

Schreier, M. (2012). *Qualitative content analysis in practice*. SAGE Publications.

Sefton, T. G., & Sirek, D. (2020). Musical self-portraits and representations of non/conformity: In the music classroom with preservice generalist teachers. *International Journal of Education & the Arts, 21*(32).

Simondon, G. (2017a). Psicosociologia della tecnicità. In A. S. Caridi (Ed.), *Sulla tecnica* (pp. 13–51). Orthotes. (Original work published 1960–1961).

Simondon, G. (2017b). Riflessioni sulla tecno-estetica. In A. S. Caridi (Ed.), *Sulla tecnica* (pp. 319–334). Orthotes. (Original work published 1982).

Simondon, G. (2025). *Corso sulla percezione (1964–1965)* (A. Colombo, Ed.). Mimesis.

Thomasson, A. L. (2004). Ontology and the methodology of metaphysics. *Philosophical Topics, 32*(1–2), 305–329.

Tódor, I., Lehmann, M., Dőri, T., & Kulman, K. (2025). Developing transversal skills in primary education: A comparative international study. *PedActa, 15*(1), 1–15.

Trapitsyn, S., & Tursynbaeva, A. (2025). Formation of information competence in future teachers based on the integration of artificial intelligence technologies in education. *Pedagogy and Psychology, 3*(64), 102–111.

UNESCO. (2024). *AI competency framework for teachers*. UNESCO Publishing.

Weigelt, S. (2025). Techno-aesthetics. *International Lexicon of Aesthetics*.

Wood, R. E. (2017). *Nature, artforms, and the world around us: An introduction to the regions of aesthetic experience*. Palgrave Macmillan.

World Economic Forum. (2026). *Artificial intelligence and the future of entry-level work: A framework for safeguarding and reinventing early career pathways*.

Zambrano, M. (2013). La distruzione delle forme. In C. Del Valle (Ed.), *Dire luce: Scritti sulla pittura* (pp. 49–64). BUR Rizzoli. (Original work published 1945).

Zecca, L. (2018). Ricerca-azione-formazione: Una strategia per lo sviluppo professionale? In G. Asquini (Ed.), *La ricerca-formazione: Temi, esperienze, prospettive* (pp. 84–91). FrancoAngeli.

Zhang, Y., & Wildemuth, B. M. (2009). Qualitative analysis of content. In B. M. Wildemuth (Ed.), *Applications of social research methods to questions in information and library science* (pp. 308–319). Libraries Unlimited.