

Rethinking *Onlife* in Education. Pedagogical Reflections for a Negotiation between Human Intelligence and AI

Ripensare l'*Onlife* in educazione. Riflessioni pedagogiche per una negoziazione tra intelligenza umana e IA

Paolo Bonafede

Università di Trento, paolo.bonafede@unitn.it

Cosimo Di Bari

Università di Firenze, cosimo.dibari@unifi.it

ABSTRACT

Ten years after the publication of *The Onlife Manifesto*, the hybridisation of human and technology takes on new nuances with the integration of generative AI in educational contexts. This contribution rethinks the concept of *Onlife* in relation to the use of generative AI, questioning the role of pedagogy in the era of cognitive and social hybridisation. Through a critical analysis of the literature and international normative principles, we examine the impact of generative AI on education, with a focus on issues of negotiation, agency and responsibility and the current tasks of Media Literacy. The aim is to propose a theoretical-pedagogical framework that makes education the privileged space for a negotiation between human and AI, promoting an approach that protects the right to a democratic education.

A dieci anni dalla pubblicazione dell'*Onlife Manifesto*, l'ibridazione tra umano e tecnologia assume nuove sfumature con l'integrazione dell'IA generativa nei contesti educativi. Questo contributo ripensa il concetto di *Onlife* in relazione all'uso dell'IA generativa, interrogando il ruolo della pedagogia nell'era dell'ibridazione cognitiva e sociale. Attraverso un'analisi critica della letteratura e dei principi normativi dei quadri internazionali, si esamina l'impatto dell'IA generativa sulla formazione, con attenzione a questioni di negoziazione, agency e responsabilità e ai compiti attuali della Media Literacy. L'obiettivo è proporre un framework teorico-pedagogico che faccia dell'educazione lo spazio privilegiato per una negoziazione tra intelligenza umana e IA, promuovendo un approccio che tuteli il diritto a un'educazione democratica.

KEYWORDS

Artificial Intelligence; Education; Onlife; Media and AI Literacy; Philosophy of Education
Intelligenza Artificiale; Educazione; Onlife; Alfabetizzazione ai Media e all'AI; Filosofia dell'educazione

OPEN  ACCESS Double blind peer review

Volume 3 | n. 1 | giugno 2025

Citation: Bonafede, P. & Di Bari, C. (2025). Rethinking Onlife in Education. Pedagogical Reflections for a Negotiation between Human Intelligence and AI. *Cultura pedagogica e scenari educativi*, 3(1), 10-22. <https://doi.org/10.7347/spgs-01-2025-02>.

Corresponding Author: Paolo Bonafede | paolo.bonafede@unitn.it

Journal Homepage: <https://ojs.pensamultimedia.it/index.php/sipeges>

Pensa MultiMedia: ISSN: 2975-0113 • DOI: 10.7347/spgs-01-2025-02

Received: 24/04/2025 | **Accepted:** 12/06/2025 | **Published:** 30/06/2025

* This contribution, fully shared by the authors, was drawn up as follows: Cosimo Di Bari authored paragraphs 1, 3 and 5, while Paolo Bonafede authored introduction, paragraphs 2 and 4. Conclusion is the result of common reflections.

Ten years *Onlife*: the human and AI in a hybrid world

Ten years after the publication of *The Onlife Manifesto* (Floridi, 2015), its core insights remain not only relevant but increasingly urgent in light of recent technological developments – particularly the pervasive integration of generative artificial intelligence (AI) in everyday life and education. The Manifesto's central claim – that the boundary between the online and offline has become increasingly blurred in the hyper-connected human condition – anticipated the emergence of a socio-technical milieu in which digital technologies are not merely tools, but structural components of our epistemic, ethical, and relational environments. In this sense, the human condition described by *The Onlife Manifesto* project has evolved into a more radical form of hybridity that now includes generative AI as a co-agent in human cognition and social processes.

At the heart of the Manifesto's philosophy lies the concept of the *inforg*, or informational organism, embedded in a broader *infosphere* – a socio-technical environment saturated with information and computation (Floridi, 2013). This ontological redefinition of the human is well summarised by one of the many metaphors cited within the Manifesto: the mangrove. This plant, in fact, lies on the border between salty and fresh water, but cannot distinguish whether this water is specifically salty or fresh: in the same way, the human being is both on-line and off-line. The mangroves appear suspended above the water, reminiscent of Octavia, one of the *Invisible Cities* described by Italo Calvino. This city is characterised by ropes suspended between two extremities, whose inhabitants, aware of their precariousness, are actually more 'stable' than those who live on top of the extremities (Calvino, 1972). The mangrove is an interesting metaphor because this plant acts as an 'ecosystem', absorbing carbon dioxide in the environment and protecting beaches from erosion with its extensive root system. It also represents a sort of 'hotspot' of biodiversity, so much so that the group of philosophers defines it as a 'nursery' capable of hosting new forms of life: in the same way, the subject, in this hybrid condition between digital and analogue, can become a vector of new communicative possibilities.

The mangrove metaphor is also powerful because it identifies the human being as the leading actor of a homeostatic process in the ecosystem, capable of preserving the balance within the culture. This view can be linked to the 'ecological' approach to the media that Neil Postman (1979) has been promoting since the 1970s: in particular, the American author emphasised the need to preserve certain forms of knowledge that were in danger of being overshadowed by the spread of television. He advocated for the integration of media into school contexts as a means to better understand and gain mastery over them. Similarly, today it is necessary to think of the human being as a mangrove that does not passively suffer the consequences of technological progress but becomes a conscious and critical interpreter, capable of cultivating humanity even in the face of the growing relevance of artificial intelligence and other concrete manifestations of the digital in everyday life.

In addition, the mangrove metaphor (and the ecological approach) offers a way to conceive the human condition as informationally integrated highlighting three transformation in three key areas: *human cognition*, which involves experience and learning (Dewey, 1938; Dewey & Bentley, 1949); *identity*, that implies subjectivation, in Biesta's terms (2010); and *agency*, that implies social responsibility, in Arendt's perspective of *vita activa* (1958). These three key concepts are now co-constructed with and through technological systems. While these ideas were once largely theoretical (Turing, 1950; McCarthy et al., 1955), the advent of generative AI systems – capable of autonomous content creation, dialogic interaction, and adaptive personalization – has rendered this hybridity visible and operational in everyday contexts, particularly in education.

Recent pedagogical and ethical debates suggest that generative AI should not merely be seen as a simple instrumental tool, but as an epistemic actor whose outputs shape learning, interpretation, and judgment. In this sense, the rise of AI marks an amplification of the *onlife* condition: learners are not only immersed



in digital networks, but they increasingly co-learn, co-create, and co-decide alongside non-human agents. This condition recalls insights from Actor-Network Theory (Callon, 1986; Latour, 2005), which challenges the modern distinction between human and non-human agency by conceptualizing both as actants in dynamic networks of meaning and power. Generative AI intensifies this dynamic, creating novel educational assemblages in which learners, algorithms, data flows, and institutional norms interact and co-evolve continuously.

Against this backdrop, two pedagogical questions become particularly salient. First, how can we preserve the centrality of the human in education, with regard to subjectivation and the risk of *becoming dishuman*¹, especially in terms of ethical concerns such as autonomy, responsibility, and decision-making? Second, what kinds of competences – both cognitive and ethical – must be developed to navigate this new hybrid environment? These questions are critical not only for curriculum design and teacher education but also for safeguarding the democratic right to education in the age of algorithmic mediation.

Our research revisits *The Onlife Manifesto* ten years after its publication to critically assess its pedagogical implications, considering contemporary challenges posed by generative AI. The Manifesto, after the first pioneering studies launched in the 1980s and 1990s, was among the first comprehensive documents to analyze technological hybridity at a systemic level, and it offers a valuable lens through which to interrogate the transformations underway in education today. Our approach is twofold: the first part of the article offers a theoretical and comparative analysis, drawing on Manifesto principles, recent literature in AIED (Rivoltella & Panciroli, 2023), AI ethics (Holmes & Porayska-Pomsta, 2023), and European regulatory frameworks (UNESCO, 2021; Council of Europe, 2022); the second part outlines a theoretical framework and operational guidelines for pedagogy in the era of cognitive and social hybridity.

1. The Contemporary Relevance of *The Onlife Manifesto*

Starting from a philosophical-conceptual perspective, *The Onlife Manifesto* opens up a significant debate in the public, political, and social space, formulating a clear call for effective European (and global) policies to cope with the increasing presence of digital technology in every sphere of human life. In the era of ‘hyperconnection’, it is crucial to develop a framework and prepare actions and strategies to educate human beings. Although it is a manifesto with strong connections to pedagogy, it is first of all interesting to note how the occurrences of the words ‘education’ and ‘pedagogy’ itself are limited and often linked to the dimensions of ‘learning’: the text, as will be seen in the following paragraphs, nevertheless relates to various texts and references that precisely over the last few decades have emphasised the importance of promoting literacy in the new technologies to form citizens.

The Onlife Manifesto begins with the acknowledgement of the definitive crisis of modernity: this process was already effectively described by Lyotard at the end of the 1970s, emphasising the transformations in the legitimisation of knowledge, which were also generated by the diffusion of new instruments of communication and information (Lyotard, 1979). The Manifesto’s admission of the ‘game over’ of modernity is nothing new, but it emphasises the need for a paradigm shift away from 20th-century models or those of modernity marked by the centrality of the subject, focused on rationality and hierarchical models. Instead of assuming deterministic visions that ‘magically’ combine digital technologies with the predisposition of democracy, it is necessary to recognise how the ‘loss of the centre’ typical of postmodernity requires a greater capacity for orientation: the category of *Bildung* thus emerges as a helpful category for orienting the subject around authentically human values. The ‘game over’ also concerns the need to overcome the human being’s claims of omniscience as an actor capable of dominating nature: from a systemic perspective,

1 Subjectification is about the ways in which education contributes to the formation of certain ‘qualities’ of the person that are not about socialisation but about the person as an individual (Biesta, 2013).



the human being should place himself in dialogue with Technique and Nature in an active and participatory, respectful and ethically grounded dimension (Cambi & Pinto Minerva, 2023)

A second central point, also prophetic, concerns the issue of information overabundance: Floridi and the other authors of the Manifesto refer to a 'corner' between Frankenstein and Big Brother. Thus, on the one hand an artificial dimension that becomes more and more the protagonist of the human (and that precisely on the human's information feeds), on the other hand, however, also a tendency towards the concretisation of the anti-utopia outlined by Orwell in 1984: an increasingly disturbing form of panopticism is being realised, marked by forms of direct and reciprocal surveillance that point towards total control. This control, which Orwell considered to have political aims, is today mainly determined by economic aims and is oriented towards profiling each subject in as much detail as possible to intercept their tastes, attitudes, and preferences. Although in the first instance oriented by the logic of profit, in reality the attention economy in recent years is increasingly interacting with political dynamics, triggering a disturbing vicious circle that, summarised by the expression 'surveillance capitalism', tends increasingly to concentrate power in the hands of a few subjects and thus betray the democratic aspirations of the digital revolution (Zuboff, 2019).

The *onlife* condition, according to Floridi, should transcend dualisms and adopt a systemic approach that considers the plurality of viewpoints, relating them to one another (Floridi, 2015). For example, the need to overcome the contradiction between public and private is emblematic, since ICTs have made it more complex to understand what is really 'public' and what is 'private'. From this awareness, the proposals drawn up for the political agenda in light of digital presence are central: there is talk of a 'relational self', the 'creation of a digitally educated society', and the 'care of the capacity for attention'. If the centrality of the relationship to define the subject is a theme that has run through many 20th-century disciplines, contemporary hyper-connectedness forces the subject to think of its own freedom in relation to the social context. While on the one hand, the digital technology offers a clear perception of freedom, in reality, this clashes with the presence of algorithms that inevitably tend to characterise in-depth suggestions, searches, and possible contacts.

After noting the extent to which technologies nowadays determine human affairs and political structures, *The Onlife Manifesto* advises against anachronistic positions of disconnection, calling instead for a critical relationship with technology. Such criticality can neither be found in a passive, deterministic adherence to an unbridled faith in progress, nor in strategies that aspire to transcendently find technology-free solutions: instead, the human being should understand, as Floridi (2015) notes, that technologies shape the human being while he critically shapes the technologies themselves. Just as the machine is highly adept at understanding the human being, similarly, the human being should take steps to become more aware of how the machine works and how it is used. On this subject, the approach promoted by Carlo Milani, who speaks of 'hacker pedagogy', is significant. Instead of delegating the ability to interact with technology to 'experts', each person should become a 'hacker', i.e., a curious explorer and an enterprising craftsman capable of making technology 'convivial' (Milani, 2022).

A third relevant theme is the preservation of attention capacities: while the focus of public debate at present is often on the capacity of digital technologies (and in particular of social networks) to create addiction, in reality, one of the most urgent fronts to be investigated concerns attention capacities. After decades in which the model of relating to information has been oriented towards accumulation, it becomes crucial today to preserve the capacity for attention, so that it ceases to be a commodity on which to do business and returns fully to the freedom of choice for subjects.

In short, the sense of the Manifesto is well represented by the metaphor with which the text closes: the invitation to 'build the raft while swimming' refers precisely to the need to immerse oneself within the revolution in progress, to find adequate solutions to stay afloat in the contingency, but at the same time to strive to ensure that one's approach is functional in building future strategies (Floridi, 2015). This conceptualisation of hybridity invites a deeper engagement with posthumanist perspectives, which have long interrogated the ontological entanglement of humans and technologies. Scholars such as Katherine Hayles



(1999) have foregrounded the cognitive and epistemological implications of human-machine assemblages, developing the notion of ‘cognitive assemblages’ to describe the co-constitutive interactions between biological and computational agents. In particular, her theory of the ‘unthought’ offers a provocative lens through which to interpret the evolving conditions of learning and meaning-making in AI-mediated environments, highlighting nonconscious processes shared across human and artificial cognition. Integrating these insights within educational theory could further enrich our understanding of agency, subjectivity, and negotiation in post-anthropocentric scenarios.

2. Literature and Governance Analysis: Converging Frameworks for AI in Education

The integration of AI into educational systems has prompted intense scholarly reflection and governance initiatives aimed at aligning technological advancements with foundational pedagogical and democratic values. A comparative analysis of recent literature and regulatory frameworks² reveals a converging set of concerns and priorities regarding the ethical integration of AI in education. Across diverse sources – academic, institutional, and policy-based – a shared commitment emerges: (1) to protect learners’ rights, (2) preserve human agency, and (3) ensure that AI serves as an augmentative rather than substitutive force within educational ecosystems.

A key reference in this convergence is the document *Artificial Intelligence and Education: A Critical View through the Lens of Human Rights, Democracy and the Rule of Law* (CoE, 2022). The document articulates a human rights-based framework emphasizing the necessity of aligning AI implementation with the principles of human dignity, non-discrimination, participation, and the right to education. Central to this perspective is the notion that AI systems used in education must remain transparent, explainable, and accountable, and that their deployment should not displace but instead support the pedagogical agency of teachers. Moreover, it warns against datafication processes that risk reducing learners to algorithmically derived profiles, thereby undermining autonomy and potentially reinforcing social inequalities.

A complementary approach is articulated in the UNESCO (2021) guidance for policymakers, which positions AI as a ‘public good’ that should be harnessed to advance SDG 4 of Agenda 2030: ensuring inclusive and equitable quality education and promoting lifelong learning. This document insists on system-wide ethical oversight and emphasizes a ‘humanistic and rights-based approach’ to AI integration. UNESCO’s report outlines four strategic areas: (1) learning with AI (e.g., intelligent tutoring systems, AI-driven content generation), (2) using AI to understand learning (through learning analytics), (3) learning about AI (AI literacy), and (4) preparing for AI (developing citizens’ critical engagement with AI). Importantly, UNESCO recognizes the need to avoid “ethics washing” and calls for genuine multi-stakeholder participation (in an ecological approach), transparency in data governance, and ethical interoperability between technologies and curricula (UNESCO, 2021).

The academic literature complements and deepens these institutional positions. In the Italian context, Rivoltella and Panciroli (2023) have proposed a taxonomy of educational engagement with AI: educating *about* AI (promoting critical awareness), *with* AI (using AI to enhance teaching and learning), and *for* AI (preparing students to shape future technologies ethically). Their concept of ‘algorithmic pedagogy’ (*pedagogia algoritmica*) emphasizes the necessity of rethinking the teacher-student relationship in light of auto-

2 The selected documents are considered guiding references because they represent authoritative and multidimensional perspectives on the relationship between AI and education. The Council of Europe (2022) and UNESCO (2021) reports develop Beijing Consensus (2019) and offer globally recognized policy frameworks grounded in human rights, democracy, and inclusion. Rivoltella and Panciroli (2023) provide a pedagogical lens rooted in AI education, while Holmes & Porayska-Pomsta (2023) contribute an in-depth ethical analysis from an interdisciplinary academic standpoint. Together, these sources form a comprehensive foundation for navigating the opportunities and challenges of integrating AI into educational systems.



mated systems. They caution against a passive acceptance of algorithmic outputs and advocate for a strengthened media and AI literacy aimed at fostering civic responsibility, reflective learning, and inclusive design practices. Their vision aligns with the broader concern that without a pedagogically grounded approach, the adoption of AI risks reinforcing technocratic and exclusionary logics.

This concern is echoed in the international scholarly landscape, notably in Holmes and Porayska-Pomsta's (2023) edited volume, *The Ethics of Artificial Intelligence in Education*. The authors and contributors examine a wide range of ethical issues arising from the integration of AI in learning contexts. These include algorithmic bias, opaque data processing, and threats to learner agency. Particular attention is paid to structural injustices perpetuated by AI systems, such as the risk of 'amplifying rather than correcting' educational inequalities (Madaio et al., 2023). The volume's contributors underscore the limitations of technosolutionism and advocate for educational contexts where AI is not merely technically effective but socially and ethically grounded. They also argue that ethical considerations should not be 'added on' post hoc, but rather be embedded from the design phase onward – a view consistent with UNESCO's call for ethical-by-design AI.

Significantly, these diverse sources reveal a striking convergence on several theoretical and operational points. First, all recognize the importance of *preserving human agency*, particularly in contexts of decision-making and assessment. Second, there is consensus on the need to *enhance transparency and explainability of AI systems used in education*, both to maintain trust and to facilitate critical engagement by students and educators. Third, these frameworks collectively emphasize *equity and non-discrimination*, with a shared understanding that AI can entrench existing social hierarchies unless explicitly designed and monitored to counteract such effects.

The Council of Europe's (2022) emphasis on 'human oversight' as a precondition for AI deployment in schools complements Rivoltella and Pancioli's (2023) insistence on critical literacy and aligns with UNESCO's call for participatory policy design and monitoring. Holmes and Porayska-Pomsta (2023), similarly, argue that educational institutions must develop internal capacity to evaluate AI tools before adoption, stressing that ethical challenges are not reducible to technical solutions, but require democratic deliberation and pedagogical intentionality, in line with Beijing Consensus (2019).

Across these texts, the *student* is conceptualized not merely as a data point or recipient of personalized content but as a *citizen* and *moral agent* whose dignity, privacy, and agency must be safeguarded. There is also agreement that educators are not merely facilitators of AI tools, but rather ethical agents and pedagogical decision-makers whose expertise must guide the use of technology. In this sense, the convergence between governance documents and scholarly literature articulates a clear counterweight to automation-driven narratives that risk marginalizing human presence and deliberation in education.

Furthermore, several authors have pointed to the risks of educational data capitalism (Preston, 2021; Soriani & Bonafede, 2024), whereby learner data becomes commodified and used for predictive profiling, often outside the control or awareness of the users. This concern intersects with broader critiques of surveillance capitalism and prompts calls for stronger data governance, particularly in contexts involving minors. In response, documents such as UNESCO's (2021) and the Council of Europe's (2022) advocate for the development of 'digital commons' and public-interest data infrastructures that align with democratic values.

In conclusion, the literature and governance documents analyzed here form a cohesive ethical scaffold for thinking about AI in education. They converge on the need for critical literacy, inclusive design, transparency, and human agency, while offering complementary frameworks for operationalizing these values in policy and practice. This convergence provides a robust theoretical foundation for evaluating the implications of generative AI in educational contexts and supports the development of pedagogical approaches that prioritize autonomy, justice, and democratic engagement.



3. Comparison with Manifesto: convergences and divergences

The previous paragraph highlights significant convergences between the vision outlined in *The Onlife Manifesto* and the contemporary ethical documents cited, starting with the recognition of the profound transformation brought about by digital technologies (and, specifically, by AI) on the human condition and education. Floridi's text (2015) offers a practical interpretative framework for reading the following documents from an interdisciplinary perspective and with a theoretical-practical approach.

The text offers a pedagogical utopian vision that serves as a foundation for fostering contemporary digital literacy. It emphasizes the role of human beings in guiding both ongoing and future transformations. This aspect, as we have seen, is also widely emphasized by policymakers, particularly in the documents mentioned in the previous section (CoE, 2022; UNESCO, 2021). Returning to the mangrove metaphor, humans must first and foremost be aware of living in contexts increasingly shaped by digital technology and governed by the mechanisms of artificial intelligence. At the same time, however, they should strive to maintain a balanced cultural environment, preventing the undermining of rights and forms of knowledge, and fostering the emergence of new ways of life and expression. This becomes possible if, instead of demonizing digital innovation (and artificial intelligence), schools and society work to empower every user and avoid concentrating power in the hands of the few. Otherwise, the real danger is fostering new forms of domination (Milani, 2022), leading to exclusion, marginalization, and educational poverty.

Moving from a framework similar to *The Onlife Manifesto*, the documents mentioned in the previous paragraph address issues related to artificial intelligence, ranging from the purpose of defending and protecting rights to objectives of critical understanding and enhancing the ethical dimension. While it is undoubtedly a matter of urgency to understand that forms of protection of each individual's personal data must be encouraged, those documents (and those actions connected to them) that aspire to emphasise the specificity of the human being and the need not to delegate to the machine functions that should be human, because they are connected to ethical dimensions, are particularly valuable from a pedagogical perspective. From this perspective, the call by CoE and UNESCO for various forms of AI education represents a decisive step in the pedagogical horizon for approaching the issue. The research by Rivoltella and Panciroli, like that of Ranieri (2024) or Holmes, is also fundamental to lead to 'building the raft while we swim', understanding that in a scenario increasingly marked by the elaborations proposed by artificial intelligence, it becomes central to dwell on the question rather than on the answer. Moreover, it becomes necessary to consider the elaborations produced by the machine as 'results' that then, to be transformed into 'answers', require mediation, precisely, human mediation. Furthermore, there is an ethical gaze that manages to protect the humanity of the human being.

Ten years after its publication, *The Onlife Manifesto*'s approach offers a significant paradigm, albeit within the limits dictated by the ongoing technological transformation. Contemporary instances and more recent reflections on information ethics continue to emphasise the need to (1) move beyond dualistic frameworks, (2) navigate the informational sea, and (3) safeguard the capacity for attention (and with it, for learning and participating in the world) fully reflect the principles of critical literacy, transparent design, and respect for human agency that emerge from the texts discussed above. In fact, the starting point for them (CoE, 2022; UNESCO, 2021; Rivoltella & Panciroli, 2024; Holmes & Porayska-Pomsta, 2023) is the same as that of *The Onlife Manifesto*: as ten years ago, it suggests the need to become aware of moving in a hybrid world in which human and technology cannot but coexist.

However, without taking the beneficial or harmful effects of this hybridisation for granted, it is necessary to recognise a guiding role for pedagogy, given its capacity to form a human being who has the skills to orient himself in an overabundance of information, to recognise attempts to capture attention, to find the appropriate formulation of questions and a correct (or, better, critical, problematic and plural) interpretation of the results, to establish the ethical principles around which to build his actions. Pedagogy, therefore, can move both to ensure a broad critical horizon on how to educate and instruct and, above all,



train the human being in a constantly changing *onlife* scenario; at the same time, pedagogy itself, by enhancing its axiological dimension, should question itself on the ethical principles to adequately address the diffusion of artificial intelligence and, therefore, its potential abuses (delegating and inhuman) but also its potential benefits.

Pedagogy therefore has a concrete task that concerns the need to make all those involved in education, instruction and training aware of the challenges posed by the current hybridisation between man and machine: the pedagogical gaze should be directed first and foremost at educators, teachers and parents so that, in addition to understanding the existence of an onlife dimension, they understand the need to ethically inhabit these cultural environments. At the same time, pedagogy itself should valorise its constitutive ‘political’ function, animating the dialogue between education and democracy also with respect to digital and AI, thus getting clear and effective messages across to policy-makers, for example with Guidelines that make it clear what the needs of human beings are and that offer cues for effective educational actions. At present, pedagogy seems far from this possibility, still disconnected (or unheeded) from a policy that, geared to chasing social and technological progress, proceeds in an endless chase. Already at the end of the 19th century, John Dewey, on the other hand, emphasised how the function of pedagogy (and of schools) in an authentically democratic context was precisely that of governing progress, not merely chasing it (Dewey, 1949). A dialogue between *The Onlife Manifesto*, pedagogical research, and the documents mentioned above can provide theoretical frameworks to ensure that policy-makers, researchers, and teachers can make schools a real engine of social progress and a “homeostat” with respect to the transformations taking place.

4. Toward a Theoretical Framework for AI-Education: Reframing *Onlife* through Dialogue, Agency, and Responsibility

While grounded in a pedagogical reading of *The Onlife Manifesto*, our framework also resonates with insights from Science and Technology Studies (STS), particularly those concerned with the performativity of socio-technical networks (Callon, 1986; Latour, 2005). STS literature offers valuable tools for deconstructing the dichotomy between human and non-human actors, proposing instead a distributed agency model in which both types of actants contribute to shaping the educational experience. From this angle, the negotiation between humans and AI is not merely a matter of instructional design, but a dynamic and relational process embedded in complex assemblages of knowledge, power, and materiality. Posthumanist pedagogy, in this sense, calls for an ontological rethinking of the learner as situated within ecologies of intelligence that include – but are not reducible to – algorithmic systems. In this sense, as we mentioned earlier, the increasing entanglement of generative AI in educational contexts necessitates a recalibration of foundational pedagogical concepts. Ten years after *The Onlife Manifesto* (Floridi, 2015), the need to revisit its core propositions – namely, the redefinition of *human cognition*, *identity*, and *agency* in a hyperconnected world – has become pressing in light of generative AI’s growing epistemic and operational role in learning. Let us briefly analyse each of these three concepts to see their implications.

Regarding *human cognition*, Artificial Intelligence in Education (AIED) has traditionally focused on enhancing human cognition through intelligent systems, adaptive learning environments, and data-driven personalization (Holmes et al., 2019). Italian scholars such as Rivoltella and Panciroli (2023) and Ranieri (2020; 2024) have expanded this focus, showing how generative AI tools—such as chatbots, text generators, and personalized recommendation engines—interact with learners’ cognitive processes, often mediating not just access to knowledge but the very structure of understanding. These tools have clear benefits: they can support personalized and self-paced learning, provide feedback at scale, and foster independent exploration (Luckin, 2018).



However, without a pedagogical frame grounded in critical media and AI literacy, such tools risk fostering intellectual dependency. As Rivoltella and Panciroli (2023) note, the uncritical use of AI may determine cognitive dependence, with learners accepting algorithmic outputs as authoritative rather than engaging them reflectively. A robust framework must therefore cultivate learners' epistemic vigilance – the capacity to interrogate the provenance, logic, and implications of AI-generated knowledge – thus reinforcing rather than diminishing human intellectual activity.

Secondly, in terms of *identity* (and, pedagogically, subjectivation), the research needs to develop a deep reflection. The field of AIED has long investigated the relationship between technology and learning (Luckin et al., 2016; Yu & Lu, 2021), but recent technological developments necessitate a shift from learning processes to education. From this perspective, the logic of instrumental implementation has to be substituted by one of dialogical negotiation. We propose the term “negotiation” to describe a relational, dynamic, and ethically responsive process in which human and artificial agents engage in co-constitutive interaction, without erasing the human subject. From this perspective, education serves as a privileged space of intercommunication between human actors and artificial intelligence, whereby learners, teachers, and AI systems engage in a dialogical and ethically grounded co-evolution rather than one characterized by substitution or automation.

This is coherent with the horizon of *Onlife Manifesto*. As seen before, the Manifesto introduced the notion of a digitally saturated lifeworld where distinctions between online and offline, human and machine, natural and artificial dissolve into new ontological configurations (Floridi, 2015). This framework, however, must now be refined to account for AI systems that do not merely mediate human cognition but increasingly act as co-agents in processes of meaning-making, decision-making, and identity construction.

In this sense, the term ‘hybridization’, while valuable, may be insufficient to capture the ethical and pedagogical stakes of such entanglement. Negotiation, as we conceptualize it, implies not a flattening of agency but a dialogical engagement where human autonomy is maintained and even enhanced through deliberate interaction with AI. This concept aligns with Biesta’s (2022) vision of *world-centered education*, which emphasizes the educational act as a situated encounter with what is other – be it nature, society, or, in this case, digital agents. Extending Biesta’s view to encompass AI as a new ‘actor’ in the educational environment invites us to consider a media ecology (Postman, 1970; Pariser, 2021) in which digital systems are not neutral channels but formative structures shaping human experience, epistemology, and moral responsibility. In this ecology, education becomes a terrain for subjectivation, wherein learners develop a self in relation to, and sometimes in tension with, algorithmic agents.

Finally, central to this framework is a reconsideration of the concept of *agency* in hybrid learning environments. Traditionally, educational theory assigns agency to human actors – teachers and students – who make decisions, construct knowledge, and shape the learning environment (Biesta, 2013). Yet AI systems now perform functions that increasingly resemble those of agents: recommending learning paths, evaluating student responses, and adapting content based on performance data (Holstein & Doroudi, 2023). This raises crucial ethical and pedagogical questions: to what extent can we attribute agency to AI? And how do we preserve human agency in this evolving ecosystem?

We adopt a nuanced view: AI systems exhibit *functional agency* – they influence decisions and actions – but lack *moral agency*, which remains uniquely human. Consequently, educational design must ensure that AI remains a tool within human-controlled systems, not a replacement for human judgment. In practical terms, this means that AI should augment teacher decision-making rather than override it and should empower students to take charge of their learning trajectories with critical awareness. Negotiation thus entails an ongoing calibration of roles, responsibilities, and boundaries between human and artificial actors.

In this perspective, a further implication of this framework is the need for shared and contextualized responsibility in the use of AI in education. Soriani and Bonafede (2024) stress the importance of examining who is accountable for outcomes generated or mediated by AI systems. Is it the educator who deploys the tool? The developer who designed the algorithm? The student who interacts with it? We propose a



model of distributed accountability, where each actor bears responsibility according to their position in the educational process.

For instance, educators must be trained to critically assess AI tools, integrate them thoughtfully into pedagogical practice, and guide students in their ethical use. Developers have a duty to design transparent, explainable, and bias-aware systems, respecting the data privacy and autonomy of users. Students, for their part, must be educated to use AI tools not as shortcuts but as aids to reflection, understanding, and creativity. The example of ChatGPT, widely used in academic contexts, illustrates the double-edged nature of such technologies: they can foster exploration or facilitate plagiarism, depending on the ethical framework within which they are embedded.

A practical implication of this view is the necessity to define institutional policies for scholar systems, university and the productive level. AI Act (UE, 2024/1689) is in this sense a first step to clarify roles and responsibilities while ensuring AI use aligns with democratic educational values³. These policies must be participatory, involving teachers, learners, developers, and policymakers in a continuous process of ethical reflection and adjustment.

5. New Tasks of Media Literacy in the AI Era

While the aforementioned mangrove metaphor can be useful in understanding the contemporary condition of the human being, it can also be insidious. Indeed, one should not take for granted the presence of a natural propensity of the human being to be a 'homeostat' in the face of the cultural change brought about by the presence of generative or digital AI. Rather than adopting a deterministic outlook, unbalanced on optimism or pessimism, it is desirable to think of pedagogy as the heart and engine of a process that helps preserve balance.

It should promote in subjects the acquisition of specific skills to use (without abuse) digital technologies and AI and to encourage awareness, criticality, and creativity during their use. From this perspective, the mangrove should be pedagogy itself, seen as a powerful agent that can offer the subject the critical skills to inhabit the contemporary situation consciously, critically, and creatively. Thus, restoring balance.

A critical reading of *The Onlife Manifesto*, when interwoven with the contemporary documents cited in the previous paragraphs, can help rethink the relationship between education and technology, between human beings and technology. The presence of generative AI is widening the occurrences and scenarios in which the hybridisation between man and machine is realised. McLuhan, with a prophetic definition, already claimed in the 1960s that 'media' were 'extensions of man' that needed to be understood (McLuhan, 1964): today, these extensions enter the contexts of everyday life in a capillary way, even going so far as to be wearable and thus accompanying almost every action of the human being, even in an unconscious manner. Against this backdrop, there is an urgent need to reflect on strategies to emphasise the centrality of the human and to ensure that interactions with machines do not overshadow the humanity of the human being or flatten ethical dimensions (Rumelin & Weidenfeld, 2018).

During the 1980s, the mentioned ecological approach of Neil Postman and the Media Education approach promoted by Len Masterman outlined the need for educational action that aspired to promote the formation of a conscious, critical, responsible, and free citizen. First of all, protectionist and prohibitionist approaches should be abandoned, since all media content can be considered a form of culture and can therefore be screened, analysed, and contextualised at school. At the same time, it has been emphasised

3 The regulation recognises the ethical principles at the ground of European values (art. 28) and from this perspective follows the importance of education. In school levels and vocational training, specific uses of AI systems are classified as high-risk; in addition, the AI act prohibits emotion inference in educational institutions, with the aim of protecting fundamental rights and ensuring responsible application of AI in education, and it also promotes AI literacy at all levels.



how a fundamental task is to bring human beings to recognise the representative dimension of the media, which are not 'windows on the world', but instruments that produce forms of opacity, often marked by ideological intentions (Masterman, 1985). Today, while it is necessary to understand that digitisation and the spread of AI are irreversible processes, it is at the same time necessary to encourage a critical literacy with respect to these novelties, to make the subject an active, conscious, responsible and creative protagonist (Buckingham, 2019).

From the 1980s to today, the Media Education approach has continued to nourish educational research and today can be extremely valuable even in the face of the spread of digital and generative artificial intelligence. Talking about Media Literacy today cannot do without a focus on the multiple languages that are present in the lives of subjects (Rivoltella & Panciroli, 2023). Therefore, it is necessary to question strategies to foster the acquisition of digital competence: the most recent document, the DigComp 2.2 framework, has been correlated with an annex that focuses precisely on how citizens interact with artificial intelligence systems. In terms of knowledge, it is necessary to have a clear understanding of capabilities and limitations, being able to explore benefits and risks; it is therefore necessary to cultivate skills for effective and conscious use, as well as being able to configure, monitor, and adapt AI systems. Also significant are attitudes, which call for an active role in artificial intelligence systems, a critical but also open attitude and a propensity to consider ethical dimensions. It is crucial to judge the relevance of the source and content, but also to have the ability to reflect with respect to security, both to avoid misuse of one's personal data and to ensure that everyone can find an inclusive and safe environment in the digital world; a decisive theme is also linked to problem solving and metacognition, since artificial intelligence invites everyone to ask themselves questions regarding the questions to be asked of the systems and the ability to transform results into answers (Vuorikari, Kluzer & Punie, 2022).

While reflections on the use of generative AI in education are beginning to spread within schools and academic research (Ranieri, Cuomo & Biagini, 2024), alongside these valuable contributions, it would be desirable for literacy not only to be declined on a technical or didactic level, which mainly has to do with learning processes. Humans should acquire a more articulated and organic competence, which also touches cognitive dimensions (avoiding 'dependence' and helping to improve the selection and evaluation of sources) and ethical dimensions (in the responsibility for one's own actions and in the ability to construct one's own identity between caring for oneself, others, and the world). Therefore, teachers and learners must go beyond superficial intuitive uses, inviting the subject to 'put their hands to the engine'.

Thus, an AI Literacy should nurture an approach marked by reasoning, reflexivity, empathy, and critical and divergent thinking; it should also orient the user to understand the logics, interests, and ideologies that nurture generative AI tools; it should also make each citizen aware of the mechanisms that aspire to capture attention, to manage the time better and to take care of himself or herself and cultivate the well-being, including digital well-being.

Also, with a view to a critical use, it is desirable to encourage experiences that lead to discovering the limits of AI, noting the ideological catches or points on which, to date, it fails to make an effective statement. There is also a need to understand how it can be used creatively, helping human beings to perform functions that are boring in order to allow them to devote themselves to something more properly human. If digital technologies and AI are increasingly able to perform functions that were previously specific to human beings, it is then urgent to investigate and preserve the ethical dimension, understanding what the specificities of human beings are that cannot be delegated to machines. Therefore, digital technologies and AI literacy initiatives should be encouraged to empower everyone to be active, responsible, and participating citizens.

These tasks should be promoted through a systematic action that concerns, first and foremost, teacher training, in a transversal manner for the various school orders, from early childhood to university education. Teachers should be at ease in their relations with AI, without fearing or demonising it, but considering it as a powerful tool that, alongside many others, can enrich learning if 'used' and not 'abused' (Moriggi & Pireddu, 2024; Carrol, 2024). In fact, if it is used as a tool capable of integrating experiences rather than



an instrument to which only human functions are delegated, it can result in a rich educational opportunity. It should then become part of the curriculum for students in a cross-curricular manner for various age groups and an interdisciplinary manner within the various school curricula. For these purposes, it is desirable to promote hybrid learning environments that can enhance the *onlife* condition of learners, fostering direct and mediated experiences in a dialogue that brings mutual enrichment and acquisition of skills. These actions necessarily require the presence of shared policies at both the ministerial and local levels, within individual institutions, and always in dialogue among managers, teachers, pupils, and families.

Conclusions

From the analysis above on *human cognition*, *identity*, and *agency*—connected with *onlife* transformation and the re-modulation of Media Literacy—three core principles emerge that form the foundation of a negotiation-centered theoretical framework for AI in education:

1. Dialogicity over autonomy: Learning in the AI era is not about isolated human independence but about dialogical interaction with algorithmic systems. Pedagogy should cultivate the skills and dispositions necessary for constructive dialogue with artificial agents, encouraging critical questioning and interpretative engagement.
2. Human-led agency: While AI can simulate certain decision-making processes, human agents must retain final authority over educational direction and meaning-making. Educational systems must be designed to keep the teacher and student at the center, with AI functioning as a supportive collaborator.
3. Ethical co-responsibility: All stakeholders—teachers, developers, students, institutions—must share responsibility for AI integration. This includes fostering AI literacy, embedding ethical design principles, and promoting a culture of accountability and transparency.

These principles align with the ethical imperatives outlined by UNESCO (2021) and the Council of Europe (2022), emphasizing the necessity of human oversight, equity, and inclusive governance in educational AI applications. By rooting our framework in these principles and integrating them with the epistemological stance of *Onlife* and the pedagogical ethics of negotiation, we think this conceptual model should be capable of guiding both theoretical reflection and educational practice in the age of AI.

References

- Annacontini, G. (2023). La sfida pedagogica dell'IA. *Cultura pedagogica e scenari educativi*, 1(2), 14–21.
- Arendt, H. (1958). *The Human Condition*. University of Chicago Press.
- Biesta, G. J. J. (2010). *Good education in an age of measurement: Ethics, politics, democracy*. Paradigm Publishers.
- Biesta, G. J. J. (2013). *The beautiful risk of education*. Paradigm Publishers.
- Buckingham, D. (2019). *The Media Education Manifesto*. Polity Press.
- Callon, M. (1986). Some elements of a sociology of translation: Domestication of the scallops and the fishermen of St. Brieuc Bay. In J. Law (Ed.), *Power, action and belief: A new sociology of knowledge?* (pp. 196–233). Routledge.
- Calvino, I. (1972). *Le città invisibili*. Einaudi.
- Cambi, F., & Pinto Minerva, F. (2023). *Governare l'età della tecnica*. Mimesis.
- Council of Europe (2022). *Artificial intelligence and education: A critical view through the lens of human rights, democracy and the rule of law*. Council of Europe Publishing.
- Cristol, D. (2024). *Apprendre à l'ère de l'intelligence artificielle*. ESF Sciences Humaines.



- Dewey, J. (1938). *Experience and Education*. Kappa Delta Pi.
- Dewey, J., & Bentley, A. F. (1949). *The Knowing and the Known*, in *The Later Works of John Dewey 1925-1953, vol. 16*, edited by Jo Ann Boydston, Southern Illinois University Press, 1989.
- Floridi, L. (2013). *The philosophy of information*. Oxford University Press.
- Floridi, L. (2015). *The Onlife Manifesto: Being human in a hyperconnected era*. Springer.
- Floridi, L. (2022). *Etica dell'intelligenza artificiale: Sviluppi, opportunità, sfide*. Raffaello Cortina Editore.
- Hayles, N. K. (1999). *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics*. University of Chicago Press.
- Holmes, W., Bialik, M., & Fadel, C. (2019). *Artificial intelligence in education: Promises and implications for teaching and learning*. Center for Curriculum Redesign.
- Holmes, W., & Porayska-Pomsta, K. (Eds.). (2023). *The ethics of artificial intelligence in education: Practices, challenges, and debates*. Routledge.
- Holstein, K., & Doroudi, S. (2023). Equity and artificial intelligence in education. In W. Holmes & K. Porayska-Pomsta (Eds.), *The ethics of artificial intelligence in education* (pp. 151–173). Routledge.
- Kandlhofer, M., Steinbaeur, G., Hirschmugl-Gaisch, S., & Huber, P. (2016). Artificial Intelligence and computer science in education: from kindergarten to university. *IEE frontiers in education conference*, 1–9.
- Latour, B. (2005). *Reassembling the social: An introduction to actor-network-theory*. Oxford University Press.
- Liotard, J.-F. (1979). *La condition postmoderne*. Les editions de minuit.
- Luckin, R. (2018). *Machine learning and human intelligence: The future of education for the 21st century*. UCL IOE Press.
- Madaio, M., Blodgett, S. L., Mayfield, E., & Dixon-Román, E. (2023). Beyond “fairness”: Structural (in)justice lenses on AI for education. In W. Holmes & K. Porayska-Pomsta (Eds.), *The ethics of artificial intelligence in education* (pp. 203–239). Routledge.
- Malavasi, P. (2019). *Educare Robot?*. Vita & Pensiero.
- Masterman, L. (1985). *Teaching the media*. Routledge.
- McCarthy, J., Minsky, M., Rochester, N., & Shannon, C. E. (1955). *A Proposal for the Dartmouth Summer Research Project on Artificial Intelligence*, <http://raysolomonoff.com/dartmouth/boxa/dart564props.pdf>
- McLuhan, M. (1964). *Understanding Media*. McGraw Hill.
- Milani, C. (2022). *Tecnologie conviviali*. Elèuthera.
- Moriggi, S., & Pireddu, M. (2024). *L'intelligenza artificiale e i suoi fantasmi*. Il Margine.
- Pariser, E. (2021). *The filter bubble: How the new personalized web is changing what we read and how we think*. Penguin.
- Postman, N. (1970). *Teaching as a subversive activity*. Delta.
- Postman, N. (1979). *Teaching as a conserving activity*. Dell.
- Ranieri, M. (2020). Educazione e intelligenza artificiale: Questioni di media literacy. *Media Education*, 11(1), 1–10.
- Ranieri, M., Cuomo, S., & Biagini, G. (2024). *Scuola e intelligenza artificiale. Percorsi di alfabetizzazione critica*. Carocci.
- Rivoltella, P. C., & Panciroli, C. (2023). *Pedagogia algoritmica. Per una riflessione educativa sull'intelligenza artificiale*. Scholé.
- Rumelin, J.-N., & Weidenfeld, N. (2018). *Umanesimo digitale*. FrancoAngeli.
- Soriani, A., & Bonafede, P. (2024). Tra logos e artigianalità: (ri)pensare il ruolo dell'Intelligenza artificiale nella didattica e in educazione. *Scholè*, 1, 49–63.
- Turing, A. (1950). Computing Machinery and Intelligence. *Mind*, 59, 433–60.
- UNESCO (2021). *Recommendation on the Ethics of Artificial Intelligence*. UNESCO.
- UNESCO (2019). BEIJING CONSENSUS on artificial intelligence and education. UNESCO.
- Vuorikari, R., Kluzer S., & Punie, Y. (2022). *DigComp 2.2: the Digital Competence Framework for Citizens*. Publication of the Office of the European Union.
- Zuboff, S. (2019). *The age of surveillance capitalism*. Profile books.

