MEDIA EDUCATION, DIGITAL LITERACY, AND TEACHER EDUCATION: PEDAGOGICAL PERSPECTIVES ON THE CRITICAL CONSTRUCTION OF MEANING IN DIGITAL CONTEXTS

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ABSTRACT

The widespread diffusion of digital technologies and artificial intelligence is reshaping how individuals construct knowledge, relationships, and social participation (Floridi, 2022). In this context, digital literacy cannot be reduced to technical skills but requires a pedagogical perspective that critically examines meaning-making processes in digitally mediated environments (Buckingham, 2007). Drawing on media education (Rivoltella, 2020), this paper discusses the risk of reducing digital education to operational competences, neglecting its critical, relational, and ethical dimensions. It argues for educational practices grounded in dialogue, critical reflection, and media awareness (Morin, 2015). Teacher education is therefore essential for fostering inclusive learning environments that promote critical thinking, meaningful participation, and responsible digital citizenship.

KEYWORDS

Media education; digital literacy; teacher education; critical thinking; digital citizenship.

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1. Introduction

Throughout history, technological revolutions have continuously reshaped the relationship between knowledge, education, and society. While the invention of the printing press transformed the dissemination of knowledge and the Internet revolutionised access to information, the emergence of generative artificial intelligence (AI) marks a further transformation in contemporary information and communication environments. Unlike previous technologies, AI no longer merely supports teaching and learning processes; it actively contributes to the generation, selection, and organisation of information and digital content. As emphasized by UNESCO (2023), artificial intelligence represents one of the most significant educational challenges of our time, calling on education systems to promote its critical, ethical, and pedagogically informed use. Consequently, the ongoing transformation extends beyond the adoption of new technological tools, profoundly affecting the ways individuals construct meaning, interpret reality, and participate in cultural and social life (Floridi, 2022).

The rapid proliferation of AI systems capable of generating text, images, multimedia content, and personalised feedback is redefining the traditional role of schools and teachers. Whereas educational innovation has long focused on ensuring access to information and fostering basic digital competences, current challenges concern the quality of knowledge construction within learning environments increasingly shaped by algorithmic mediation. Artificial intelligence not only accelerates access to information but also influences how information and digital content are generated, selected, organised, and presented, thereby affecting the ways students and teachers interpret information, develop critical judgement, construct meaning, and build new understandings.

Against this backdrop, the educational debate remains largely polarized between two opposing positions. On the one hand, AI is presented as a powerful opportunity to personalise learning, enhance instructional effectiveness, and support teachers' professional practice. On the other hand, growing concerns emphasize the risks associated with its widespread adoption, warning against the progressive replacement of educational relationships with automated processes. Such tensions reflect the so-called Frankenstein Complex, understood as a form of cultural resistance that perceives intelligent technologies as a threat to teachers' professional identity and to the fundamentally human dimension of education. However, framing the debate exclusively in terms of technological optimism versus technophobia oversimplifies a much broader transformation that challenges the very nature of educational processes.

The key educational question is therefore not whether artificial intelligence should be embraced or rejected, but rather how its integration into educational contexts can be critically governed. The challenge is fundamentally pedagogical. It concerns the capacity of schools to continue fostering critical thinking, autonomous judgement, responsibility, and the collaborative construction of knowledge within learning environments where algorithms increasingly influence the generation, selection, organisation, and circulation of information and content, thereby shaping the conditions within which meaning is constructed.

From this perspective, digital literacy can no longer be understood merely as the technical ability to use digital technologies. Although operational digital skills remain essential, they are insufficient to address the complexity of today's communication ecosystems. Contemporary education requires learners and teachers to understand how algorithmic systems operate, critically evaluate

the reliability and quality of information, recognize the mechanisms through which digital representations are constructed, and reflect on the ethical, cultural, and social implications of artificial intelligence. Digital competence therefore assumes a distinctly pedagogical dimension, combining technological proficiency with critical interpretation and responsible decision-making.

Within this evolving landscape, media education acquires renewed relevance. Since its emergence, media education has promoted an approach aimed not simply at teaching individuals how to use technologies, but at enabling them to critically understand media languages, representations, and the socio-cultural processes through which reality is constructed (Buckingham, 2003; Rivoltella, 2020). Today, however, this perspective must be reconsidered in light of the profound changes introduced by artificial intelligence. Algorithms no longer function merely as communication mediators; they influence the generation, selection, organisation, and circulation of information and digital content, thereby affecting the conditions within which individuals construct and negotiate meaning. Consequently, media education must move beyond an instrumental conception of digital literacy and evolve into a pedagogical framework capable of fostering a critical understanding of algorithmic ecosystems.

Within this context, teacher education assumes strategic importance. Initial and continuing teacher education cannot be limited to developing operational skills related to emerging technologies; rather, it must cultivate reflective professionals capable of designing learning environments in which artificial intelligence is integrated consciously, ethically, and consistently with educational aims. The educational value of technological innovation lies not in the availability of increasingly sophisticated digital tools, but in teachers'

capacity to critically shape their use, transforming technology into a means of promoting inclusion, participation, and the collaborative construction of knowledge.

Building upon these considerations, this paper explores the relationship between media education, digital literacy, and teacher education, arguing that teacher preparation represents the key driver for supporting the transition toward AI-assisted education. More specifically, it advances the view that media education provides a relevant pedagogical framework for supporting teachers and students in the critical construction of meaning within algorithmic ecosystems. By doing so, it moves beyond both technological determinism and resistance to innovation, while reaffirming the central role of educational relationships, critical thinking, and pedagogical responsibility in twenty-first-century education.

2. Media education and digital literacy beyond technological determinism

The rapid pace of technological innovation and the widespread adoption of artificial intelligence are profoundly reshaping the role of education, transforming not only the tools through which teaching and learning take place but also the ways in which knowledge is constructed, interpreted, and shared. Within this evolving landscape, educational change cannot be reduced to the mere introduction of new technologies into schools, as it directly affects the nature of educational mediation and the very meaning of teacher professionalism. While earlier phases of digital transformation primarily focused on integrating digital devices and virtual learning environments into educational practice, the emergence of generative AI calls for a broader pedagogical reflection, shifting attention from technology itself to the educational processes it is reshaping.

For many years, technological innovation was interpreted through the lens of technological determinism, namely the belief that the mere availability of digital tools would inevitably improve teaching and learning. This perspective strongly influenced educational policies, directing investments toward technological infrastructures and the acquisition of operational digital skills related to software, platforms, and devices. Although these initiatives undoubtedly contributed to the progressive digitalisation of education, they frequently promoted a reductionist understanding of innovation, assuming that pedagogical change would naturally follow technological progress.

Educational research has progressively challenged this assumption. As Rivoltella (2013) argues, the quality of educational innovation depends not on technological tools themselves but on teachers' ability to integrate them within intentional, coherent, and pedagogically grounded instructional designs. Digital technologies generate meaningful educational benefits only when embedded in teaching practices that foster students' active participation, collaboration, and the collaborative construction of knowledge. Technology should therefore be understood not as the goal of educational action but as one of the mediating resources through which meaningful learning experiences can be promoted.

The emergence of artificial intelligence makes this reflection even more urgent. Unlike previous generations of digital technologies, generative AI systems do not simply facilitate access to information; they actively participate in its production by generating texts, images, summaries, translations, personalised learning pathways, and conversational interactions. Such developments may encourage the belief that some of the functions traditionally associated with teachers can gradually be delegated to intelligent systems. However, as Selwyn (2019) reminds us, educational technologies are never neutral. They embody specific assumptions about learning, knowledge, and the purposes of

schooling. Consequently, every technological innovation requires critical pedagogical reflection before its implementation, ensuring that enthusiasm for technological progress does not overshadow the complexity of educational processes.

Indeed, teaching extends far beyond the simple transmission of information. Teacher professionalism is grounded in the capacity to design meaningful learning experiences, interpret students' educational needs, build significant educational relationships, and foster critical reflection. Although artificial intelligence is now capable of generating information with remarkable speed and efficiency, it cannot replace the cultural mediation through which information is transformed into knowledge. As Morin (2015) argues, education fundamentally consists of helping individuals understand complexity by connecting, contextualising, and interpreting information rather than merely accumulating it. The unprecedented availability of information therefore makes the development of critical competences even more essential, enabling learners to construct knowledge and meaning within increasingly complex information ecosystems.

This perspective inevitably highlights the central role of teacher education. Darling-Hammond (2006) argues that the quality of an educational system largely depends on the quality of teacher preparation. Teacher education should not be conceived merely as technical training aimed at mastering new digital tools. Instead, it should represent a continuous process of professional learning through which teachers develop the ability to interpret educational change critically, adapt their pedagogical practices to emerging contexts, and make informed educational decisions. Within this perspective, professional development becomes inherently reflective, positioning technology as an object of pedagogical inquiry rather than simply a resource to be employed.

Accordingly, the concept of digital competence also requires reconsideration. For many years, digital literacy was primarily associated with the ability to use technological devices, navigate online environments, and manage digital platforms. While these skills remain essential, they are no longer sufficient to address the challenges posed by artificial intelligence. Interaction with systems capable of autonomously generating information and digital content demands higher-order competences that extend beyond technological proficiency toward a critical understanding of how algorithms generate, select, and organise information and content, and how these processes can influence human interpretation of reality.

This broader perspective is reflected in the European DigCompEdu Framework (Redecker, 2017), which expands the concept of teachers' digital competence beyond purely technical abilities. The framework emphasises that the effective educational use of technology requires teachers to design inclusive learning environments, foster students' active participation, personalise learning pathways, and critically employ digital resources to enhance teaching quality. Digital competence should therefore be understood as an integral component of teacher professionalism, closely connected to pedagogical design, educational reflection, and professional judgement.

At the same time, the evolution of artificial intelligence requires moving beyond a conception of learning centred exclusively on information acquisition. Pellerey (2004) argues that competence cannot be reduced to the possession of isolated knowledge and skills; rather, it consists of the ability to mobilise cognitive, relational, and ethical resources in order to address new and complex situations. Similarly, Margiotta (2007) maintains that education should promote not only knowing and knowing how to do, but also knowing how to be, recognising the relational, ethical, and identity dimensions of learning.

Within educational contexts increasingly characterized by cognitive automation, these dimensions become even more significant, as they represent aspects of teacher professionalism that cannot be replicated by algorithms.

Consequently, the role of teachers in the twenty-first century differs substantially from that of previous generations. At a time when information is instantly accessible and generative AI can produce sophisticated content within seconds, teachers' added value lies in their capacity to guide students toward the critical interpretation of information and its transformation into meaningful knowledge. This involves fostering epistemological doubt, encouraging argumentation, supporting dialogue among multiple perspectives, and promoting metacognitive reflection that enables learners to construct meaning rather than merely memorise information.

These transformations also require a profound rethinking of initial and continuing teacher education. Professional development can no longer rely exclusively on courses devoted to learning specific platforms or digital applications, which rapidly become obsolete. Instead, teacher education should prioritize the development of reflective professionals capable of critically interpreting technological innovation, designing meaningful learning experiences, and evaluating the pedagogical value of emerging technologies. This objective can be achieved through inquiry-based learning, action research, communities of practice, and collaborative reflection on professional experience, thereby fostering transferable competences capable of responding to future technological developments.

This perspective aligns with Hargreaves and Fullan's (2012) concept of professional capital, according to which teaching quality depends not only on teachers' individual competences but also on their collective capacity to engage

in continuous collaboration, professional learning, and reflective practice. Within an educational landscape characterized by the rapid evolution of artificial intelligence, professional capital becomes a strategic resource, enabling teachers to respond proactively to change rather than passively adapting to it. Technological innovation thus becomes an opportunity for educational growth rather than a source of professional uncertainty.

Ultimately, the primary challenge for teacher education is not to prepare teachers who are merely proficient in the use of artificial intelligence, but professionals capable of critically governing its integration into educational processes. The objective is not to adapt education to technology but to orient technology toward the core values of education: inclusion, participation, critical thinking, responsibility, and the collaborative construction of knowledge. From this perspective, artificial intelligence should not be regarded as the endpoint of educational innovation but rather as the starting point for a broader reflection on the meaning of teaching and learning in contemporary society.

It is precisely from this need that media education assumes a pivotal role. While teacher education defines the professional competences required to address educational change, media education provides the pedagogical framework through which algorithmic ecosystems can be critically interpreted, knowledge construction can be understood, and teachers and students can be supported in developing genuine digital citizenship. The transition from technical competence to the critical construction of meaning therefore represents the point of convergence between teacher education, media education, and artificial intelligence, paving the way for the theoretical discussion developed in the following section.

3. Media Education as a pedagogical paradigm for the critical construction of meaning in algorithmic ecosystems

The transformations introduced by artificial intelligence require a reconsideration of media education within contemporary educational contexts. Media education has historically aimed to develop individuals' capacity to critically analyse media messages, understand the processes through which representations are constructed, and recognise the cultural, social, and economic conditions that shape media production and reception. In this sense, the critical approach to media education developed by Masterman (1985) and subsequently elaborated by Buckingham (2003) provides a relevant theoretical basis for interpreting the challenges posed by contemporary algorithmic environments.

Within this contribution, the concept of critical construction of meaning is not proposed as an entirely new theoretical construct. Rather, it is understood as a theoretical-methodological re-elaboration of principles already established within the critical tradition of media education, particularly in the contributions of Masterman (1985) and Buckingham (2003), reconsidered in relation to the specific characteristics of algorithmic ecosystems. Its purpose is therefore not to replace established approaches to media education, but to examine how their critical and interpretative principles can be applied to environments in which information and digital content are increasingly generated, selected, organised, personalised, and distributed through algorithmic systems.

Buckingham's (2003) framework is particularly relevant in this regard. His approach to media education identifies four key concepts—representation, language, production, and audience—which provide complementary perspectives for the critical analysis of media. Rather than treating media content as transparent or neutral, these concepts encourage learners to

investigate how representations are constructed, how media languages shape communication, how production processes influence content, and how audiences are addressed, positioned, and engaged. In algorithmic ecosystems, these four concepts retain their educational relevance while acquiring additional dimensions related to automated processes of content generation, recommendation, personalisation, and distribution.

The first concept, representation, concerns the ways in which media construct versions of reality rather than simply reflecting it. Within algorithmic environments, this dimension becomes particularly significant because generative AI systems can produce texts, images, and other forms of digital content that may appear coherent and authoritative while remaining the result of computational processes based on data, models, and specific design choices. Media education should therefore enable learners to question how digital representations are generated, what assumptions or biases they may reproduce, which perspectives may be privileged or marginalised, and how such representations influence the interpretation of reality.

The second concept, language, concerns the codes, conventions, and expressive forms through which media communicate. In contemporary digital environments, this dimension extends to the ways in which algorithmically generated content reproduces, recombines, and transforms linguistic, visual, and multimodal conventions. Developing critical media competence therefore requires learners not only to understand the formal characteristics of digital communication but also to examine how different forms of representation contribute to credibility, persuasion, emotional engagement, and the attribution of meaning.

The third concept, production, draws attention to the institutional, technological, economic, and cultural conditions within which media content is created and circulated. Applied to algorithmic ecosystems, this concept requires critical consideration of the systems and actors involved in the generation, selection, organisation, and distribution of information and digital content. This includes examining the role of platforms, technological infrastructures, data, commercial interests, and algorithmic criteria in shaping the information environments encountered by users. From this perspective, media education helps learners recognise that digital content does not emerge within neutral environments but is embedded in broader technological, economic, and cultural processes.

The fourth concept, audience, is particularly relevant for understanding algorithmic ecosystems. It draws attention to the ways in which media address, engage, and differentiate their users. In contemporary digital environments, audiences are increasingly involved in processes of data-driven profiling, segmentation, recommendation, and personalisation that influence the content to which users are exposed. Users are therefore not simply recipients of media content: their interactions and behavioural data can also contribute to shaping subsequent processes of content selection and distribution. From a media education perspective, analysing audience therefore involves critically examining how algorithmic systems configure exposure, visibility, and participation, and how these processes shape the informational environments within which individuals interpret content and construct meaning.

Taken together, representation, language, production, and audience provide a multidimensional framework for critically analysing contemporary algorithmic environments. Their educational relevance lies not only in understanding how digital media operate, but also in enabling learners to question the processes

through which information and content acquire visibility, credibility, and relevance. In this context, the critical construction of meaning involves the capacity to interpret information, contextualise it, compare perspectives, evaluate sources and representations, and relate digital content to broader cultural, social, and educational contexts.

This perspective also clarifies the distinction between the automatic generation of information or content and the human construction of knowledge. Artificial intelligence can generate, select, organise, personalise, and distribute information and digital content with increasing speed and sophistication. However, these processes should not be equated with the construction of knowledge or meaning. Knowledge construction requires interpretation, contextualisation, critical judgement, dialogue, and cultural mediation. The educational challenge therefore lies in enabling learners to engage critically with algorithmically mediated information while maintaining responsibility for the processes through which such information is interpreted and transformed into meaningful knowledge.

From this perspective, media education assumes renewed relevance within teacher education. Teachers need to understand not only how artificial intelligence tools function, but also how algorithmic mediation influences the informational environments in which students learn, communicate, and participate. Teacher education should therefore foster the capacity to apply the four dimensions of representation, language, production, and audience to the critical analysis of algorithmic ecosystems, while designing educational experiences that promote reflection, dialogue, critical judgement, and responsible participation.

The transition from technical digital competence to the critical construction of meaning should therefore be understood as a re-elaboration and extension of established media education principles rather than as a departure from them. In algorithmic ecosystems, the educational task is not merely to teach students how to use emerging technologies, but to support them in understanding how information and digital content are generated, represented, organised, personalised, and circulated, and in critically interpreting the conditions within which meaning is constructed. This perspective provides the theoretical basis for considering how teacher education can respond to algorithmic mediation while preserving the critical, relational, and democratic purposes of education.

4. Discussion. Towards a pedagogical framework for teacher education in algorithmic ecosystems

Artificial intelligence represents far more than a technological innovation capable of transforming educational tools. Rather, its increasing integration into contemporary educational environments is transforming the processes through which information and digital content are generated, selected, organised, and circulated, thereby reshaping the conditions within which knowledge is constructed and shared. From this perspective, the educational debate cannot be reduced to the dichotomy between technological enthusiasm and technophobia, nor interpreted solely through concerns about the potential replacement of teachers by intelligent systems. Instead, the central challenge lies in education's ability to preserve its critical function within contexts where algorithms increasingly shape the informational and communicative conditions within which meaning is constructed.

The analysis presented in this paper suggests that the pedagogical response to the widespread adoption of artificial intelligence cannot be limited to strengthening digital competences or introducing new technological tools into educational settings. Rather, it calls for a reconceptualisation of teacher education as a process aimed at developing reflective professionals capable of critically interpreting ongoing transformations and translating them into educational practices grounded in the principles of inclusion, participation, and democratic citizenship. Within this perspective, teacher education extends beyond its traditional training function and becomes a key means through which educational systems can support the cultural change required by the digital transition.

The reinterpretation of media education proposed in this study leads to a further theoretical consideration. Whereas, in the era of traditional mass media, the primary goal was to educate citizens capable of critically interpreting media messages, the age of artificial intelligence requires educators to foster an understanding of the processes through which algorithmic ecosystems generate, select, organise, personalise, and distribute information and digital content. This implies a significant shift in pedagogical focus—from education about media to education for the critical construction of meaning. In this contribution, the critical construction of meaning is not proposed as an entirely new theoretical construct, but as a theoretical-methodological re-elaboration of principles already established within the critical tradition of media education, particularly in the contributions of Masterman (1985) and Buckingham (2003). Its relevance in contemporary algorithmic ecosystems lies in reconsidering these established principles in

relation to environments increasingly characterised by the algorithmic generation, selection, organisation, personalisation, and distribution of information and digital content.

Building upon these considerations, this paper proposes an interpretative framework to guide teacher education within today's educational landscape. This framework is articulated around four closely interconnected dimensions.

The first dimension concerns critical awareness, understood as the ability to understand how algorithmic systems operate, recognise their limitations, analyse the criteria through which they process information, and critically evaluate their educational implications. Such awareness constitutes a fundamental prerequisite for avoiding both the rejection of innovation and the uncritical acceptance of emerging technologies.

The second dimension concerns media competence, understood not as the technical mastery of digital tools but as the ability to critically interpret media languages, representations, and the processes through which information and digital content are generated, selected, organised, circulated, and interpreted. From this perspective, media education provides the theoretical framework within which digital literacy can be reinterpreted, moving beyond a purely functional conception of digital competence.

The third dimension is pedagogical design. Teachers are increasingly required to integrate artificial intelligence into learning environments that foster reflection, collaboration, argumentation, and metacognitive thinking. Educational innovation should therefore not be equated with the mere adoption of new technologies, but rather with the capacity to employ them in ways that promote meaningful, inclusive, and transformative learning experiences.

The fourth dimension concerns ethical and relational responsibility, which emerges as a defining characteristic of teacher professionalism in the age of artificial intelligence. The growing diffusion of intelligent systems reinforces the central role of teachers in fostering authentic educational relationships, promoting inclusion, safeguarding students' autonomy of judgement, and encouraging the ethical and responsible use of digital technologies, in accordance with recent international recommendations (European Commission, 2022; UNESCO, 2023).

These four dimensions converge toward a common pedagogical objective: fostering the critical construction of meaning. Understood within the established tradition of critical media education and re-elaborated in relation to algorithmic ecosystems, this objective involves supporting learners in critically engaging with the information and content generated, selected, organised, personalised, and distributed through digital systems. Although artificial intelligence is now capable of generating information rapidly and efficiently, responsibility for helping students interpret, contextualise, critically evaluate, and assign meaning to that information remains firmly within the educational domain. Knowledge continues to be a relational, cultural, and social process that cannot be delegated to algorithmic systems.

From this perspective, the contribution proposed in this paper does not interpret artificial intelligence as a force destined to diminish the role of teachers, but rather as an opportunity to redefine teacher professionalism. Teacher education is therefore called upon to prepare professionals who are not only capable of using emerging technologies critically, but, above all, able to guide learners in critically interpreting information, contextualising it, and transforming it into meaningful knowledge. Reinterpreted in light of the transformations introduced by artificial intelligence, media education emerges

as a pedagogical framework through which schools can critically address algorithmic mediation and pursue educational innovation while preserving the fundamentally human, relational, and democratic nature of education.

5. Conclusion

The transformations introduced by artificial intelligence require educational research to move beyond a conception of innovation focused exclusively on technological advancement. As argued throughout this paper, the fundamental educational challenge does not lie in the integration of new technologies into schools, but in understanding how these technologies are reshaping the processes through which information and digital content are generated, selected, organised, and circulated, the conditions within which knowledge is constructed, the forms of cultural mediation through which learning takes place, and the role of teachers themselves. Artificial intelligence should therefore not be regarded merely as a new instructional resource, but as a significant transformation of contemporary information and educational environments, with important implications for the relationship between knowledge, education, and society.

Within this context, teacher education assumes a strategic role. Initial and continuing professional development cannot be limited to fostering technical competences related to the use of emerging technologies. Instead, it must cultivate reflective professionals capable of critically interpreting technological innovation and orienting its use toward educational purposes consistent with the principles of inclusion, participation, and democratic citizenship. The value of teachers no longer lies in competing with intelligent systems in the production of information, but in their unique capacity to guide students in the critical interpretation and contextualisation of information and in its

transformation into meaningful knowledge, fostering learning processes grounded in educational relationships, dialogue, and the collaborative construction of understanding.

The theoretical perspective advanced in this study identifies media education as a relevant pedagogical framework for supporting this transition. More specifically, the analysis suggests that the critical construction of meaning can be understood as a theoretical-methodological re-elaboration of principles already established within the critical tradition of media education, particularly in the contributions of Masterman (1985) and Buckingham (2003), and reconsidered in relation to the specific characteristics of algorithmic ecosystems. This perspective extends the traditional concept of digital literacy, moving beyond the technical mastery of digital tools toward the development of the capacity to critically understand how algorithms, media, and artificial intelligence contribute to the generation, selection, organisation, personalisation, and circulation of information and digital content, thereby shaping the conditions within which individuals construct knowledge and meaning.

This perspective also has important implications for both educational research and professional practice. Future teacher education programmes should integrate technological competence, pedagogical reflection, ethical responsibility, and media education within a coherent and comprehensive framework. At the same time, further empirical research is needed to investigate how these competences can be effectively developed in both initial and continuing teacher education and to evaluate their impact on teaching quality, educational innovation, and student learning outcomes.

Ultimately, the future of education will not depend on the capacity of technologies to replace teachers, but on the capacity of educational systems to critically redefine their role within societies increasingly shaped by algorithmic mediation. Artificial intelligence undoubtedly expands opportunities for teaching and learning; however, it cannot replace what constitutes the very foundation of education: human relationships, dialogue, responsibility, and the collaborative construction of meaning. Preserving and renewing this profoundly human dimension will ultimately determine not only the quality of future educational systems but also the enduring significance of teacher professionalism in the age of artificial intelligence.

References

Buckingham, D. (2003). *Media education: Literacy, learning and contemporary culture*. Polity Press.

Buckingham, D. (2007). *Beyond technology: Children's learning in the age of digital culture*. Polity Press.

Darling-Hammond, L. (2006). *Powerful teacher education: Lessons from exemplary programs*. Jossey-Bass.

European Commission. (2022). *Ethical guidelines on the use of artificial intelligence (AI) and data in teaching and learning for educators*. Publications Office of the European Union.

Floridi, L. (2022). *Etica dell'intelligenza artificiale. Sviluppi, opportunità, sfide*. Raffaello Cortina Editore.

Hargreaves, A., & Fullan, M. (2012). *Professional capital: Transforming teaching in every school*. Teachers College Press.

Margiotta, U. (2007). *Insegnare nella società della conoscenza*. Pensa MultiMedia. https://hdl.handle.net/10278/33989

Masterman, L. (1985). *Teaching the media*. Comedia.

Masterman, L. (1997). *A scuola di media. Educazione, media e democrazia nell'Europa degli anni '90*. Editrice La Scuola.

Morin, E. (2015). *Insegnare a vivere. Manifesto per cambiare l'educazione*. Raffaello Cortina Editore.

Pellerey, M. (2004). *Le competenze individuali e il portfolio*. La Nuova Italia.

Redecker, C. (2017). *European framework for the digital competence of educators: DigCompEdu*. Publications Office of the European Union.

Rivoltella, P. C. (2013). *Fare didattica con gli EAS. Episodi di apprendimento situato*. La Scuola.

Rivoltella, P. C. (2020). *Nuovi alfabeti. Educazione e culture nella società post-mediale*. Scholé.

Selwyn, N. (2019). *Should robots replace teachers? AI and the future of education*. Polity Press.

UNESCO. (2023). *Guidance for generative AI in education and research*. UNESCO Publishing.