What human intelligence in the age of Artificial Intelligence?

Educational aims and curricular perspectives

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The advanced and human-like capabilities demonstrated by Artificial Intelligence (AI) prompt a reflection on the relationship between human intellect and AI, as well as on the potential risk of human substitution by machines. In this context, it becomes urgent to consider which forms of human intelligence should be cultivated to address the challenges posed by AI and to collaborate with it in ways that promote both individual and collective well-being. In this regard, the promotion of critical thinking and epistemic cognition and the development of ethical-social mental habits are identified as priorities.

Keywords: artificial intelligence, human intellect, ethics, critical thinking, epistemic cognition.

Quale intelligenza umana nell'era dell'Intelligenza Artificiale? Obiettivi educativi e prospettive curricolari
Le capacità avanzate e simili a quelle umane dimostrate dall'Intelligenza Artificiale (IA) spingono a riflettere sul rapporto tra intelletto umano e IA, nonché sul potenziale rischio di sostituzione umana da parte delle macchine. In questo contesto, diventa urgente considerare quali forme di intelligenza umana debbano essere coltivate per affrontare le sfide poste dall'IA e collaborare con essa in modi che promuovano il benessere individuale e collettivo. A questo proposito, la promozione del pensiero critico e della cognizione epistemica e lo sviluppo di abitudini mentali etico-sociali sono identificati come priorità.

Parole chiave: intelligenza artificiale, intelletto umano, etica, pensiero critico, cognizione epistemica.

The Age of AI

One of the phenomena characterising the current era is the massive and widespread diffusion of Artificial Intelligence (AI), which represents a tool with which most of us, even if only unconsciously, interact on a daily basis.

In fact, not only the number of generative AI software — often presented in the form of chatbots — is increasing, but there is also a significant rise in the integration of AI into software and applications that were originally of other type, such as tools for data analysis or for the creation of graphic artifacts, social networks and messaging apps, as well as into physical objects such as common household appliances.

Today's conception of 'artificial intelligence' can be traced back to the 1950s, in particular to the well-known contributions of McCarthy (McCarthy, Minsky, Rochester, Shannon, 1955/2006) and Turing (1950). From the very beginning, the issue — which is still relevant today — concerning the relationship between AI and human intelligence was raised. In particular, the main subject of study was the ability of machines to emulate human behaviour. As is well known, Turing's early experiments led to the development of the imitation game. In reflecting on the supposed capacity of machines to think, he noted the excessive ambiguity of the terms 'thinking' and 'machine' and reformulated the question in terms of an imitation game. In essence, this involves the participation of three unrelated individuals: a man (A), a woman (B), and an interrogator (C). The latter is placed in a separate room from the first two and is tasked with asking questions through a teletype in order to discriminate who is A and who is B, while A tries to mislead C and B tries to help him in the identification. In this scenario, the issue under examination is no longer generally related to the thinking capacity of machines, but to the consequences of replacing A with a machine. Along these lines, under the logic of the Turing Test, it is hypothesised that a machine can be considered intelligent if, involved in the game of imitation, it manages to deceive the human interrogator by not allowing him to distinguish between human and machine.

From the 1950s onwards, the evolution of AI has experienced both setbacks and moments of astonishing progress — the so-called AI winters and springs (Mitchell, 2022) — until reaching its current state.

The recent surge of AI forms part of the broader digital revolution driven by modern information and communication technologies and enabled by exponential growth in computational power at decreasing costs. This context has fostered key advances in neural networks and deep learning, marking a shift from symbolic and logic-based systems to connectionist, inferential, and statistical models of AI.

The most widely used types of AI today are generative; therefore, they are capable of generating outputs that are gradually becoming indistinguishable from what could be created by a human being. Such developments once again call for reflection on the nature of AI, concerning which it remains complex to formulate an unambiguous definition, similarly to the difficulty encountered when trying to describe the concept of intelligence. In the document *A definition of AI: Main capabilities and scientific disciplines* (European Commission, 2018), the independent High Level Expert Group on Artificial Intelligence established by the European Commission proposes the following definition:

> Artificial Intelligence (AI) refers to systems designed by human beings that, given a complex goal, act in the physical or digital world by perceiving the surrounding environment, interpreting the structured or unstructured collection of data, reasoning about the knowledge derived from such data, and deciding on the best actions to take (in accordance with predefined parameters) to achieve the predefined goal. AI systems can also be designed to learn to adapt their behaviour by analysing how the environment has been affected by their previous actions (European Commission, 2018, p. 9).

From such a description of AI systems, it becomes clear that they are capable of perception, reasoning, decision-making, action, and learning, faculties we typically associate with human intelligence. This, in turn, raises the question of what the differences are between human and artificial intelligence, and whether those differences are a matter of degree or of kind. This also relates to the possibility, foreseen by some scholars, of a rise of a strong or general type of AI. The subject of debate, therefore, is the possibility of creating instruments not only capable of displaying certain specific abilities and

aspects of intelligence, but of developing a general system capable of integrating these individual capabilities and to which consciousness, knowledge, and understanding comparable to those of a human being can be attributed.

If we understand human intelligence or thought as something that goes beyond a merely computational and combinatorial character and which, following Benasayag and Pennisi (2024), does not reside solely in the brain, but is the result of a multitude of interacting factors — to the extent that it can be said that it is not so much the brain that thinks as the body — then one is inclined to argue that the difference between human being and AI is of a nature. Human intelligence, in fact, refers to elements such as experience, awareness, wisdom, embodiment, and relationship, terms we commonly understand with meanings that do not seem adequately applicable to the capabilities demonstrated by AI systems. Following Mitchell (2022), the development of a general type of AI capable of equaling human intelligence represents a remote or unattainable possibility, since the human intellect is characterised by a complexity that is currently unimaginable for a machine, stemming, first and foremost, from the human quality of experiencing as an embodied being interacting with the world. Among human peculiarities, the capacities to attribute meaning, to understand, and to abstract are primarily emphasized. Moreover, according to the author, creativity itself cannot be attributed to AI, not even when it generates products of sublime quality such as the musical compositions created by certain programmes, which appear indistinguishable from those produced by illustrious musicians. Indeed, the author argues (*ibidem*) that creativity only emerges from human-machine interaction, since the beauty, refinement, and the meaning of music are only appreciated by the human being, while they remain elusive from the machine's point of view. According to these perspectives, what makes humans incomparable is, first of all, bio-embodiment, as well as a set of characteristics and biases (from the machine's point of view), such as affective, emotional, and sometimes irrational aspects that enable us, among other things, to act as a social group and not merely as individuals.

The hypothesis of a difference in nature between AI and human intelligence is reached also by following Floridi's reasoning (2022): in the author's interpretation, AI cannot be considered an intelligent agent according to the meaning of 'intelligence' that is commonly attributed to human behaviour. The issue lies in shifting the focus of observation from the process to the products: AI can achieve results that are indistinguishable from those that

would be achieved by humans; whereas it does not imitate the process that a human would employ in pursuing such goals. In this sense, a machine's behaviour is not intelligent in itself, but we would describe that behaviour as intelligent if it were displayed by a human. AI, therefore, is based on "a divorce [...] between action and intelligence" (*ivi*, p. 53); it separates the ability to solve problems and perform tasks from the need to be intelligent in the human sense of the term. The possibility that action, divorced from intelligence, can still produce effective outcomes is largely due to the fact that the world in which we live is progressively structured as an environment suitable for AI. To clarify this passage, it is helpful to refer to the concept of the *infosphere* as proposed by Floridi (2017), who exemplifies how these technologies are affecting a change both in the nature and meaning of reality. This means that we can consider reality as an *infosphere* interpreting it as the informational environment, which encompasses the totality of informational entities, their properties, interactions, processes, and mutual relationships, including spaces of analogue and offline information. Following the idea that 'what is real is informational and what is informational is real' (*ivi*, p. 45), the term *infosphere* can be employed as a synonym for reality, as it is considered in informational terms. From this perspective, it is possible to understand how the redefinition of the world brought about by the digital revolution increasingly makes it a technology-compatible habitat, in which the possibility that an agent has an artificial nature is taken as a basic assumption. In this sense, AI and digital technologies demand on humanity to adapt and, consequently, the places and ways in which we live are taking on characteristics that make them tailored to technology. In this direction, the need for awareness and a critical approach is called for. The human task with regard to digital innovation, in this perspective, does not only lie in foreseeing and designing digital innovation but pertains above all to the commitment to governing such innovation. This calls, therefore, in the first instance for consideration of the ethical implications arising from the dynamics of the digital revolution and the evolutionary scenarios that are envisaged.

A widespread conscious and critical approach to AI, however, is partly hindered by the rapid evolution and easy accessibility that characterise this technology. Rapid progress ensures that AI always comes across as disruptive, making a true understanding of its mechanisms and use difficult, since by the time its literacy is promoted, it has reached a level of development beyond what has been explored and with which a considerable number of users have

eventually become sufficiently familiar. Moreover, the highly user-friendly aspect makes AI — at least seemingly — accessible to a large number of users who can use it regardless of having acquired sufficient knowledge and awareness of it. This is further encouraged by the use of Large Language Models (LLM), which often take the form of chatbots, making it possible, at least to some extent, for humans and AI to engage in conversation using natural language. As a result, it is possible to use generative AI with little or no prior training on the subject and, thus, regardless of the degree of knowledge accrued regarding it. This entails several risks, all the more so since this type of AI is now also increasingly being used for informational purposes. From this perspective, this has an influence on the approach to the creation and use of content as well as on the processes of knowledge acquisition and construction. The resulting dangers, among others, are those related to phenomena that pertain to the category of information disorder (Wardle, Derakhshan, 2017). The dis-information, mis-information, and mal-information dynamics are supported and amplified by the use of AI as an informational channel, as it makes it difficult to adequately analyse and evaluate sources and facilitates the creation of false content, e.g. through deepfake techniques, which enable the production of misleading artifacts. Such ease of access to information, coupled with the difficulty of verifying its veracity, leads to phenomena such as information overload, epistemic deprivation, in which there is a reduction in true or justified beliefs and an increase in false or inadequately justified ones (Piazza, Croce, 2019), and knowledge illusion, whereby we mistakenly believe that we possess a greater measure of knowledge than we actually do. (Sloman, Fernbach, 2018). In this sense, we run the risk of being driven by an "illusory superiority bias" (Rubinelli, Diviani, Fiordelli, 2020, p. 77), which results in the overestimation of our competences. The effect is often that of behaviours whereby certain individuals, despite having limited competence in specific fields, believe that they have both the duty and the right to express their opinion on the most disparate topics, merely because they have had a superficial experience of them or have read some information about them. This also leads to phenomena labelled as the 'end of expertise' and the 'expert crisis' (Nichols, 2017). AI, and more generally the Internet, in this perspective, constitute a route to simplistic and apparent erudition. Having access to an almost unlimited amount of information, we turn to search engines and AI chatbots much more frequently than we try to answer our own questions through a valid investigation process and by consulting

authoritative and reliable sources. To some extent, this may also influence the very conception of learning, which risks being increasingly interpreted as a mere accumulation of information and technical skills rather than as a process of real understanding and intellectual formation.

Thus, in addition to the risks more eminently related to the ethical sphere posed by the widespread diffusion and unconscious use of AI — from the violation of privacy to the possible reduction of jobs — some dangers are also inherent in the acquisition and awareness of knowledge. From an educational point of view, it could be argued that, in general, the development of the intellectual and moral profile of human beings is being undermined.

Pedagogical implications

From the brief and concise reflections expressed so far regarding the explosion of AI and its influence in today's society, it emerges that these issues primarily concern the ethical sphere. In particular, there is a perceived need not merely to engage in a debate over technicalities, limiting the discussion to the consideration of contingent risks and opportunities, but rather to adopt a farsighted perspective and to understand towards which horizon, and in the direction of which *human project* (Floridi, 2022) technological progress should be steered, making consequent choices in terms of AI design and governance (*ibidem*).

As technological progress transforms reality and risks determining social evolution, it becomes an inescapable object of pedagogical investigation. Following the Deweyan lesson, pedagogy must undertake the task of weaving virtuous links with society and addressing emerging social demands by directing contemporary transformations in light of its own teleological horizon (Dewey, 1899/1951). Pedagogy is called upon to renew its role as a social and emancipatory knowledge, as well as a critical and planning one. It has to actively engage in the conceptualization and realization of a defined human project. To this aim, it must delineate an idea of society, of human being and citizen, and envisage the best possible paths for the cultivation of such humanity. In this direction, pedagogy, together with other forms of knowledge, is invested with the task of analysing the present society to foresee the future one, according to the utopian posture that characterises it. It is not so much a matter of conducting an examination of current conditions, as

of exercising understanding and criticising the present to grasp the directions that the currently hegemonic ideologies and structures — whether explicitly or implicitly — intend to impress upon the future, with the aim, should these prove undesirable, of hypothesising and designing possible alternative directions (Michelini, 2025). With reference to AI, this means becoming aware of the ideologies and values underlying technological progress and the relationships between machines and human beings, in order to avert the risk of intellectual conditioning and the domination of technology over humanity. Far from giving in to simplistic dystopian interpretations that predict the definitive overcoming of the human, the challenge is to embrace and direct technological progress without an accommodating and condescending spirit. It is not a question of adopting a reluctant attitude towards technology, but of freeing ourselves from perspectives in which technological development becomes a vehicle for industrial ideology. Rather, we could find a path to make digital technology an effective tool for the emancipation of human beings (Gallese, Moriggi, Rivoltella, 2025).

It thus becomes urgent to engage in a shared reflection on teleological and axiological questions; in this sense, it is indispensable to reach the definition of an idea of individual and community well-being to be taken as the ideal regulator for decisions concerning the design and governance of the evolution of AI and beyond (Michelini, 2024). In our view, this ideal is to be sought in the democratic principles of human development. As Floridi (2022) exposes, we are witnessing a re-ontologisation of reality and a wrapping of society and the human around technologies. In this sense, we run the risk that, using the image of Benasayag (2016), human beings will increasingly resemble a jelly that can be moulded by society according to the demands of technology and the market, to the point that "postmodernity defines intelligence as the capacity to disintegrate just enough to be able to conform to the exoskeleton of the enterprise. One is considered intelligent if capable of playing hide-and-seek with oneself to the point of getting lost" (*ivi*, p. 18). Such scenarios pose a danger to the development of the human being both as a person and as a citizen. What is threatened, in this sense, is full self-realization, including the capacity to be an intellectually autonomous and self-determined individual, as well as the development and safeguarding of democracy. Recovering the ideal of human development in a democratic direction becomes urgent for an emancipatory pedagogical action, committed to releasing individuals and society from the subaltern condition to

which they risk being relegated with respect to today's ideologies of the market and technological progress. This regulative ideal of personal and social well-being, considered in particular from the point of view of the type of human intelligence to be consequently cultivated, also refers to Aristotelian *eudaimonia*, the ultimate and self-sufficient aim which, in brief and at the risk of considerable simplification, can be understood as happiness that derives from the full self- realisation, within a communal dimension, practised through the activity of the intellect according to virtue, in the moral as well as the cognitive and contemplative directions.

In this sense, from the perspective of AI evolution, it is necessary to study and create the conditions whereby the virtuous exercise of the human intellect is supported and fostered by the interaction with machines rather than hindered. It is therefore necessary to ensure the establishment of fruitful partnerships between humans and machines. Along these lines, for instance, some concepts referable to the framework of *hybrid* intelligence (HI) or *hybrid human-artificial intelligence* (HHAI) (Järvelä *et alii*, 2025) have emerged, a paradigm that supports the possibility and necessity of a human-machine relationship that enhances human faculties rather than replacing them.

Curricular perspectives

Developing a virtuous human intelligence for the AI age entails understanding which key goals education and training should pursue. From this perspective, and in light of the intellectual as well as ethical and social risks and implications briefly outlined above, it is believed that a renewed interest in an authentic and urgent, albeit utopian, *education to reason* is desirable (Bertin, 1968/2021). In this sense, focusing primarily on school education, and alongside the need to integrate AI in learning pathways and to educate in its use, in order to promote an adequate literacy and education (Panciroli, Rivoltella, 2023), the importance of cultivating the faculties of thought that uniquely characterise human intelligence is emphasised. In this sense, it is considered appropriate to redefine and restore centrality to two dimensions that, following Bertin (1968/2021), are considered constitutive of the educational process: ethical-social education and the intellectual one. In particular, we identify three perspectives: the promotion of moral and ethical-social

dispositions, the development of epistemic cognition, and critical thinking education.

As far as the former is concerned, considering the limited scope of the present contribution, we merely observe that school, even in the face of the problematic nature of today's ethical-social issues, cannot limit themselves to promoting intellectual dispositions alone, but must also embrace the goal of moral and ethical education (Baldacci, 2020).

Alongside this, in the age of AI an education oriented towards intellectual development becomes urgent. From this point of view, given the easy access to an almost unlimited amount of information, teaching processes can in no way be focused merely on the transmission of content. The point is not to imply that curricular disciplines are irrelevant; on the contrary, in response to mechanisms of knowledge acquisition corrupted by phenomena such as epistemic deprivation, appropriate disciplinary and transversal *formae mentis* must be developed. If one of the fundamental aspects that distinguish human intelligence from artificial intelligence lies in the ability to grasp meaning, then it becomes necessary to promote an education oriented toward understanding. From a methodological point of view, it becomes necessary to set up challenging didactic situations, which allow learners to engage in refined mental operations and to interact with knowledge, theories, concepts, structures, languages, methodologies, logics, and knowledge structures, in order to address complex issues and solve problems within certain domains of knowledge and to develop corresponding disciplinary mental habits (Martini, 2014). In the information and knowledge society, it becomes crucial to promote the development of epistemic cognition (Greene, Yu, 2015; Greene, Sandoval, Bråten, 2016). It is unrealistic to expect all individuals to develop a high level of competence in every domain of knowledge, especially considering the distribution of knowledge and cognitive labor that characterises our society (Sloman, Fernbach, 2018). However, within a democratic framework, it is still necessary to promote adequate scientific literacy and the development of appropriate skills and dispositions that enable people to think and act in an epistemically aware and responsible manner. Only in this way, indeed, can the conditions be created for individuals to actively participate in a process of social evolution characterised by high information and knowledge intensity. In this sense, it is necessary to promote faculties related to epistemic cognition, understood, in a first approximation, as a set of skills, competencies, and beliefs that indi-

viduals employ to determine what they actually know, distinguishing it from what they simply believe, without the availability of sufficient evidence, and from what they are doubtful or distrustful of (Greene, Yu, 2015; Greene, Sandoval, Bråten, 2016). Moreover, generally, it refers to a reflection and awareness about the nature of knowledge and knowing. This means fostering knowledge that is not only declarative and content-oriented but also developing a deep understanding with respect to the way disciplines function and their underlying logic, as well as the related mechanisms of knowledge production and validation, also to be able to consciously make use of information content and consequently be able to make decisions on a variety of issues. From the perspective of disciplinary learning, it is therefore necessary to promote epistemic knowledge. Developing epistemic cognition within disciplinary domains involves, for example, understanding the meaning of a discipline, the different forms of knowledge it encompasses, and the epistemic practices through which they are developed and judged (Greene, Sandoval, Bråten, 2016). Intellectual education, in this sense, must develop adequate epistemic virtues, understood as stable dispositions comprising both character traits and cognitive abilities, such as honesty and intellectual curiosity, reasoning skills, and memory, insofar as they are employed to achieve valuable epistemic goals (*ibidem*; Tombolato, 2023). In this direction, the human being of the AI era must be characterised as a virtuous epistemic agent (Tombolato, 2023), who is shown to be capable of acting in the light of epistemic virtues and epistemic goals, as well as being able to evaluate and employ epistemic practices and standards (*ibidem*).

At the intersection of intellectual and ethical-social education lies critical thinking, identified as one of the fundamental mental habits that structure human intelligence at the time of AI. In this regard, it is believed that, in order to educate people capable of pursuing full self-realisation as autonomous and self-determined individuals, capable of resisting the intellectual conditioning effects posed by the potential drifts of technological progress, and the forging influence of the currently dominant ideologies mentioned above, it is necessary, first and foremost, to educate in critical thinking. Such a disposition can be interpreted, following Foucault, primarily as "the art of not being excessively governed" (Foucault, 2015/2024, p. 35), understood as an ethical-political attitude. In this sense, it is necessary to cultivate a disposition towards critical analysis of society, its ideologies, and structures, as a response to the process of standardisation and homogenisation of con-

tent and thought also operated also through the cultural and media industry and exacerbated by the use of new technologies (Horkheimer, Adorno, 1944/2010). In this regard, one should consider how the algorithms that govern the content that is presented to us on search engines and social networks, even with the use of AI, contribute to standardising and stereotyping information, knowledge, and perspectives, by promoting phenomena such as echo chambers and epistemic bubbles (Nguyen, 2018). In this direction, in response to logics related to the use of AI that induce superficial knowledge and thinking, it becomes necessary to develop critical thinking understood as "a way of approaching ideas that aims to understand fundamental and deep truths, rather than simply their superficial and more easily perceived view" (hooks, 2023, p. 33). From this perspective, it is essential that the educational environment, at all levels, is pervaded by critical and scientific spirit as well as a democratic and anti-dogmatic attitude (Baldacci, 2019). More specifically, within disciplinary teaching, conditions must be created whereby, starting from curricular subjects and the epistemological characteristics that distinguish them, pedagogical-didactical situations are set up aimed at developing those capacities and dispositions that are considered distinctive of the critical thinker and constitutive of *critical thinking* as an intellectual and reflexive activity aimed at making decisions on what to do and what to believe (Ennis, 1987; Facione, 1990). Among the main skills, in this sense, structuring a critical thinking habit are those of analysis, interpretation, argumentation, explanation, evaluation, and self-regulation, but also attitudes such as curiosity, intellectual honesty or openness to others' viewpoints. In this direction, the need to educate thinking as a logic of inquiry, in the Deweyan sense (1933/2006), is emphasised, by engaging in processes of problem-posing and problem-solving, hypothesis formation, and verification.

To adequately promote such forms of education, it is believed that a new centrality should be given to the curriculum as a pedagogical and formative device (Frabboni, 2002). In this direction, it is believed these educational directions should be articulated from a curricular perspective. More specifically, while maintaining a transversal character and recognising the impossibility, given their nature, of being interpreted as susceptible to formal teaching, they could be made explicit in a second-level curricular form, collateral to the curricula of the various disciplinary fields, to ensure their systematicity and organicity (Baldacci, 2020). Moreover, they can be regarded as common nodes across the various fields of knowledge from which to realise an

integrated curricular design, which promotes connections between school experiences and life experiences and that enhances inter- and intra-disciplinary connections (Martini, Michelini, 2020). Although it is not possible to further develop this perspective here, it is sufficient to emphasise that this requires careful reflection on the definition of curricular aims and the consequent content and methodological choices as well as on the methods and logics of design.

References

Baldacci M. 2019. *La scuola al bivio. Mercato o democrazia?*. Milano: FrancoAngeli.

Id. 2020. *Un curricolo di educazione etico-sociale. Proposte per una scuola democratica*. Roma: Carocci.

Benasayag M. 2016. *Oltre le passioni tristi. Dalla solitudine contemporanea alla creazione condivisa*. Milano: Feltrinelli.

Benasayag M., Pennisi A. 2024. *ChatGPT non pensa (e il cervello neppure)*. Santarcangelo di Romagna (RN): Jaca Books.

Bertin G.M. 2021. *Educazione alla ragione. Lezioni di pedagogia generale* (1968). Roma: Avio Edizioni Scientifiche.

Dewey J. 1899. *The School end Society*. Chicago: The University of Chicago Press (It. trans. by E. Codignola e L. Borghi, *Scuola e società* (1949). Firenze: La Nuova Italia. 1951).

Id. 1933. *How we think*. Boston, MA: Heath (It. trans. by A. Guccione Monroy, *Come pensiamo. Una riformulazione del rapporto fra il pensiero riflessivo e l'educazione* (1961). Firenze: La Nuova Italia. 2006).

Ennis R. H. 1987. A taxonomy of critical thinking dispositions and abilities. In J. Baron & R. Sternberg (Eds.), *Teaching thinking skills: Theory and practice*. New York, NY: Freeman. 9-26.

European Commission. 2018. *A definition of AI: Main capabilities and scientific disciplines*. Brussels: European Commission. https://digital-strategy.ec.europa.eu/en/library/definition-artificial-intelligence-main-capabilities-and-scientific-disciplines [02/06/2025].

Facione P. A. 1990. *Critical thinking: A statement of expert consensus for purposes of educational assessment and instruction (Research findings and recommendations)*. Millbrae, CA: The California Academic Press.

Floridi L. 2017. *La quarta rivoluzione. Come l'infosfera sta trasformando il mondo*. Milano: Raffaello Cortina Editore.

Id. 2022. *Etica dell'intelligenza artificiale. Sviluppi, opportunità, sfide*. Milano: Raffaello Cortina Editore.

Foucault M. 2015. *Qu'est-ce la critique?*. Paris: Vrin (It. trans. by A. Di Gesu e M. Polleri, *Che cos'è la critica*?. Bologna: DeriveApprodi).

Frabboni F. 2002. *Il curricolo*. Roma-Bari: Laterza.

Gallese V., Moriggi S., Rivoltella P.C. 2025. *Oltre la tecnofobia. Il digitale dalle neuroscienze all'educazione*. Milano: Raffaello Cortina Editore.

Greene J.A., Sandoval W.A., Bråten I. (Eds.). 2016. *Handbook of epistemic cognition*. New York, NY: Routledge.

Greene J.A., Yu S.B. 2015. Educating Critical Thinkers: The Role of Epistemic Cognition. *Policy Insights from the Behavioral and Brain Sciences*. 3(1). 45-53. https://doi.org/10.1177/2372732215622223 [02/06/2025].

hooks b. 2023. *Insegnare il pensiero critico. Saggezza pratica*. Milano: Meltemi.

Horkheimer M., Adorno T. W. 1944. Dialektik der Aufklärung. Frankfurt: Social Studies (It. trans. by R. Solmi, *Dialettica dell'illuminismo* (1966). Torino: Einaudi. 2010).

Järvelä S., Zhao G., Nguyen A., Chen H. 2025. Hybrid intelligence: Human–AI coevolution and learning. *British Journal of Educational Technology*. 56. 455-468. https://doi.org/10.1111/bjet.13560 [02/06/2025].

Martini B. 2014. *La mente disciplinare ovvero il rapporto mente-saperi alla luce della prospettiva modularista*. In G. Annacontini, R. Gallelli (Eds.), *Formare altre(i)menti*. Progedit: Bari. 128-147.

Martini B., Michelini M.C. (Eds.). 2020. *Il curricolo integrato* Milano: FrancoAngeli.

McCarthy J., Minsky M.L., Rochester N., Shannon C.E. 2006. A Proposal for the Dartmouth Summer Research Project on Artificial Intelligence, August 31, 1955. *AI Magazine*. 27(4). 2006. 12-14. https://doi.org/10.1609/aimag.v27i4.1904 [02/06/2025].

Michelini M.C. 2024. Il futuro del pensiero nell'era digitale. *Form@re. Open Journal per la formazione in rete*. 24(2). 257-271. https://doi.org/10.36253/form-15966 [02/06/2025].

Id. 2025. Prospettive educative per la scuola secondaria. *Paideutika*. 41. 27-46. https://doi.org/10.57609/paideutika.vi41.9339 [02/06/2025].

Mitchell M. 2022. *L'intelligenza artificiale. Una guida per esseri umani pensanti*. Torino: Einaudi.

Nguyen C. T. 2018. Echo Chambers and Epistemic Bubbles. *Episteme*. 17(2). 1-21. http://dx.doi.org/10.1017/epi.2018.32 [02/06/2025].

Nichols T. 2017. *La conoscenza e i suoi nemici: l'era dell'incompetenza e i rischi per la democrazia*. Roma: Luiss University Press.

Panciroli C., Rivoltella P.C. 2023. *Pedagogia algoritmica. Per una riflessione educativa sull'intelligenza artificiale*. Brescia: Scholé.

Piazza T., Croce M. 2019. Epistemologia delle fake news. *Sistemi intelligenti*. 31 (3). 439-468.

Rubinelli S., Diviani N., Fiordelli M. 2020. *Pensiero critico e disinformazione. Un problema contemporaneo*. Roma: Carocci.

Sloman S., Fernbach Ph. 2018. *L'illusione della conoscenza: perché non pensiamo mai da soli*. Milano: Raffaello Cortina Editore.

Tombolato M. 2023. *Promoting epistemic virtues across the curriculum to educate 21st century citizens*. In M. Carmo (Ed.), *Education Applications & Developments VIII*. 95-107. https://doi.org/10.36315/2023eadVIII [02/06/2025].

Turing A.M. 1950. Computing Machinery and Intelligence. *Mind*. 49. 433-460.

Wardle C., Derakshan H. 2017. *Information Disorder: Toward an interdisciplinary framework for research and policy making*. Strasbourg: Council of Europe https://edoc.coe.int/en/media/7495-information-disorder-toward-an-interdisciplinary-framework-for-research-and-policy-making.html [02/06/2025].