

Elsa M. Bruni

Università degli Studi "G. d'Annunzio" di Chieti-Pescara
elsa.bruni@unich.it



Double Blind Peer Review

Citazione

Bruni E. M., (2023). Meaningful, affective and social learning in the algorithm domain, *Giornale Italiano di Educazione alla Salute, Sport e Didattica Inclusiva - Italian Journal of Health Education, Sports and Inclusive Didactics*. Anno 7, V 2. Edizioni Universitarie Romane

Doi:

<https://doi.org/10.32043/gsd.v7i2.894>

Copyright notice:

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

gsdjournal.it

ISSN: 2532-3296

ISBN: 978-88-6022-470-5

ABSTRACT

That emotions are closely linked to learning is an established fact, already considered in classical philosophical elaborations. However, scientifically grounding this acquisition and making it objectively intrinsic to real educational design have posed and still pose difficulties, the problem of teaching practices that are not always convincing and the risk of unstable learning that is difficult to transfer into everyday life.

The contribution aims to provide food for thought on learning processes by integrating scientific discoveries from different fields of knowledge, with a view to reasoning on their constructive use in educational contexts, school in particular, and in teaching practices. Central will be to place this reflection within the current issue of the pervasiveness of artificial intelligence in the various social spheres and the impact of algorithms on the construction of educational learning.

Che le emozioni siano strettamente connesse all'apprendimento è un dato acquisito, considerato già dalle elaborazioni filosofiche classiche. Tuttavia, fondare scientificamente tale acquisizione e renderla oggettivamente intrinseca alla reale progettazione educativa hanno rappresentato e rappresentano ancora una difficoltà, il problema di pratiche d'insegnamento non sempre convincenti e il rischio di apprendimenti instabili e difficilmente trasferibili nella vita quotidiana.

Il contributo mira a fornire spunti di riflessione sui processi di apprendimento integrando scoperte scientifiche di campi di sapere differenti, nella prospettiva di ragionare sul loro impiego costruttivo nei contesti educativi, scolastici in particolar modo, e nelle pratiche didattiche. Centrale sarà collocare tale riflessione all'interno dell'attuale questione della pervasività dell'intelligenza artificiale nei diversi ambiti sociali e dell'impatto degli algoritmi sulla costruzione di apprendimenti formativi.

KEYWORDS

Learning, Emotions, Algorithms, Educational research
Apprendimento, Emozioni, Algoritmi, Ricerca educativa

Received 20/05/2023

Accepted 20/05/2023

Published 20/05/2023

1. Theoretical premises

The treatment of the themes of learning, of educational action, of training in general, has in recent years undergone original in-depth studies, linked to the diversified cultural and social framework in terms of cognitive styles and revitalised thanks to the promotion of investigations that are more attentive to unveiling the hidden and submerged dimensions of human cognitive and training processes.

It is, in fact, since the 1970s that educational, pedagogical and didactic research, especially the Italian one, has opened up to consider the incidence of deeper and more intimate components of the human being, unconscious and affective dimensions, coming to qualify them as inseparable, even determining, from cognitive and logical maturation. The human sciences have been reorganised in a structuralist and philosophical-analytical sense, in a phenomenological and dialectical perspective; pedagogical-didactic epistemology has been moving towards more dynamic lines of analysis emancipated from the procedures of a prescriptive scientificity; the image of 'science made of sciences' has favoured the formulation of a scientific method that respects epistemic objectivity but at the same time is open to intersubjectivity; the categories of education and training have freed themselves from the constraints of idealistic and dogmatic investigations and have been refined beyond the pure meaning of linear intellectual maturity; the didactic operari has come to terms with the radical need to reflect on its own models of reference, freeing itself from the mechanism of impersonal procedures; the interaction between artificial intelligence and human intelligence has generated questions about the potential but also the risks of automation of people's learning, decision-making, training and transformative processes; the same idea of experience as a founding category of the educational process, Deweyanly understood as "ways of doing and suffering" (Dewey, 1938a), is today profoundly under scrutiny in the face of an elusive reality, in front of and within an irreal space, in which information imposes itself by "hiding" things and their meaning (cf. Han, 2021a; Boden, 2018). These were the main steps that laid the foundations for reconsidering learning and training processes as an interweaving of experiences, as complex articulations of several dimensions, from the personal to the genetic, from the social to the cultural to the historical, from the rational to the irrational (Lyotard, 1979; Granese, 1990; Laporta, 1996; Mazzoni, 2005, Cambi, 2006; Bruni, 2021a). These are issues that are radically embedded in our cultural, existential, social, identity paradigms. In other words, they are issues and problems that directly condition the ways in which we acquire and make our own knowledge

and information and, consequently, elaborate our own worldviews and being-in-the-world (Briggs, Burke, 20052).

Certainly, the new digital order has shaken educational reflection and not only, since it has in fact undermined the modern and twentieth-century paradigm, it has decreed the miniaturisation of things by entrusting absolute power to information. It has in a special way broken the link between the human being and the object world, aiming in intentions and in practice at an extreme improvement of human existence, which, however, has lost those anchorages and fixed points that serve as irreplaceable agents in the search for meaning, identity, and the acquisition of freedom and autonomy.

It is evident that the human being today tends to count (data and information) but not to narrate, has no historical continuity, but accumulates information, learns and decides on an algorithmic basis without understanding the deep meaning of things in the frantic attempt to find the most effective information for the convenient fulfilment of the moment. What counts, to quote Han (2021a, 2021b), is '*the short-term effect*'. If we shift our attention to the trend in the educational sphere (theoretical and practical), we find that interest and resources have mostly been concentrated on the controllable aspects of the dynamics implemented or desired in the attempt, more utopian than realistic, to provide answers at the level of teaching methods and forms of learning. By placing at the centre the concern for didactic efficiency, for the specific organisation of 'doing education', little consideration has been given to the general reflection on the impact of technologies, and also of the school practices connected to them, on minds, on unconscious dimensions, on intellectual development, especially of children who live in a time invaded and pervaded by technologies, monitored and influenced by the flow of computer stimuli.

In terms of didactics, beyond the ideal proclamations, the primary reference still remains the ascertainment of learning, which is matched by the desire to select knowledge and content deemed indispensable so that young people immersed in the flow of media communication are capable of mastering the dynamics of technology and being socially in step with the times. In general, pedagogical intentionality has focused on the search for means and methodologies aimed at facilitating the transmission and acquisition of particular knowledge and arithmetic patterns. On the other hand, informal agencies, such as media channels of communication, while not born with the aim of being educational, have in fact even become major sources of indoctrination. These informal agencies become uncontrollable producers of information that is just as unmanageable and difficult

to verify in terms of both quantity and quality, monitoring, and recording them in veritable databases, the moods, desires, and tendencies of their users who, as a result, find themselves passively attracted to everything that has been constructed ad hoc to have similar effects. While everyone talks and writes about reflexivity and the education of critical thinking, the assumption that learning is simply a mechanical capacity, a pure ability to acquire knowledge by transmission and thanks to the power of memory, comes back overbearingly. If, therefore, on the one hand there is the social world that attracts by appealing to the power of the emotional and the passionate aspect, on the other hand there is the school world that paradoxically does not oppose a meaningful narrative, but insists on the strength of a cold and impersonal logic applied in both teaching and learning. This is a first problematic element that simultaneously exposes problems within the two realities, that of social media and technology and that of the formal educational model, the school. It could be said, without fear of exaggeration, that in today's media society both the mass-media world, a tireless producer of "documedial" capital put into circulation (Ferraris, 2014), and the contexts with educational intentionality, in constant tension and in perpetual, not always fruitful effort to modernise the disciplinary and didactic framework, pursue their respective objectives by resorting to linear-mechanistic paradigms that fail to grasp, indeed shatter, the relationship between education, as the acquisition of form and identity of the individual, life lived and the cultural dimension with all its symbolic, ethical and value-based bearing.

2. Emotional predisposition, human thinking, artificial intelligence

What emerges as a basic assumption is that no human being can rely on performativity to live. On which it depends that no human being constructs knowledge, engages in complex thinking, and makes meaningful decisions without emotions (cf. Nussbaum, 2001).

We know, in fact, that 'emotion and cognition are supported by interdependent neural processes. [...] the brain is a highly metabolically expensive tissue and evolution would not have supported wasting energy and oxygen on thinking about unimportant things. Put briefly, we only think about the things that matter to us' (Immordino-Yang, 2017, p. 14).

On the other hand, even in Socrates' time, there was no hierarchy of values and functions between soma and psyche. Plato himself, who was the first to make a clear distinction between body and soul, reason and psyche, mind and senses according to a relationship of dominance of the former terms over the latter, was

forced to continually return to the theory that separated and subordinated in qualities and tasks the two parts in man so that precisely the public would understand what was not obvious in his time (cf. Plato, *Phaedo* and *Republic*).

It is clear that if human thought exists because it lives in a situation of emotional predisposition, in what Heidegger (1927) defines in terms of the fundamental emotional state, artificial intelligence only aims at calculation for which any emotional intrusion is a hindrance.

Whereas thought, therefore, feeds on desire, as a disposition and precondition for its development, and is at the same time nourished by pathos, artificial intelligence follows the obedience of calculation, is deprived of vitality, is apathetic and anaffective. Human thought does not reproduce, but is original; it is not limited to a primitive knowledge of algorithmic recognitions, but conceptualises, reflects, questions, experiences, learns to trust, 'suffers', relates with, creates.

We must not forget that human education was born in the cultural history of the West as a question. At the dawn of Hellenic history, it was the fundamental question that was not consumed in the search for an answer nor did it fade into obsessive attempts to fix the question in order to find the answer. *Paideia* as question was substantiated, in the archaic phase of Hellenic history, in the very act of endless questioning, it rested on the essence of the question (cf. Bruni, 2018). It goes without saying that such reasoning leads to an analysis of the processes that guide and operate within educational agencies. This ultimately meant rethinking what happens in the school seen in a new sense as a place of affectivity, of feelings, of relationships that mature over a long period of time in which people spend many of their years in it.

The evidence that unites the side of scientific research in education and the universe of concrete practices and experiences is the specificity of the motor that drives both, reason and its exercise (rationality) as interpretative and praxical criteria.

It is, in fact, within the new cultural and social framework, which emerged at the end of the last century, that the vision of rationality changes both as a criterion of the epistemological logic of knowledge and as the foundation of human thought and action, of teachers and students. It was clear even then that the new perspective of interpreting rationality, and thus the very idea of human nature, had important repercussions in the sphere of the most central pedagogical and didactic issues (cf. Rescher, 1988; Pentucci, 2018).

The inadequacy of formal-logic, mathematical-experimental procedures was confirmed in the many fields of science; on the other hand, focusing on the influences of multifaceted social, cultural, linguistic, subjective and historical conditioning could only justify dialectical, hermeneutic, more critical research approaches to subjective experience.

The basic assumption was that the human being and his formative processes could be investigated by combining various dimensions of thought, on the one hand linked to spatio-temporal, i.e. empirical-experimental categories, and on the other hand capable of designing the transformation of the contingent, of being in a different way projectual. The need to keep the educational subject anchored to real reality and to find forms of scientific reasoning capable of grasping and interpreting the real subject's authentic formative and identity needs arose from many sides, both theoretical and concrete.

3. Philosophy of Human Formation

Within the horizon outlined so far, four perspectives of analysis can be deduced, four interconnected planes that characterise the central aspects of the scientific debate and, even more so, the plane of educational planning.

1) In the wake of Antonio Damasio (1994) and Howard Gardner (2006), emotions are determinants of learning.

2) In the wake of the Deweyan enquiry model (cf. Dewey, 1938b), technical rationality and the consequent mechanistic and linear conception of learning are superseded by the reflexive rationality equivalent to the conscious ability to be critical, to make perplexity the enquiry procedure.

3) Along the lines traced among many by Morin (2014, 2017, 2022), didactic engineering, which traces the old, but not yet outdated, pedagogical epistemology, turns out to be incapable and misleading in constructing formative models within the experience of being, tacitly pursuing the will to determine and schematise the complex processes of learning and teaching.

4) Artificial intelligence, unlike human thought, does not conceptualise knowledge. It is neither discursive nor does it interrogate experience by constantly relating it to the exercise of thought. It aims to accumulate as much data as possible, it produces information that is disseminated in media communication channels that, while not born with the aim of being educational, actually become main sources of indoctrination.

In the light of these considerations, it is possible to outline possible pedagogical and didactic perspectives in line with the current complexity, attempting to stem the risks inherent in the digital order. It is clear, first of all, that the dualism between knowledge and environment must be overcome, a more realistic communion must be established between codified knowledge, typical of the formal subject areas, and informal knowledge, arising from daily experience in the environment that each person goes through every day and drawn from the subject through a spontaneous learning process.

Teaching is not simplifying learning, it is not reducing all resistance. It cannot follow the digital process that aims precisely at ordering and creating the world in the form of images and information accessible without obstacles and without effort. Learning, in fact, implies attention (incompatible with the hyperstimulation of digital communication), stability (incompatible with the absence of anchorage to the things of the world as opposed to non-things, information and data), relationships with the Other (incompatible with the loneliness of repetitive, self-referential relationships devoid of empathy), passion (incompatible with the cold calculation that aims to reproduce itself and which, following the logic of predictability, does not create the new but multiplies the equal), community (made up of body, physiognomy, relationships, ties, contrasts, experience, which forms the Self and puts us in relation with the gaze of the Other).

In the domain of the algorithm (Zellini, 2018; Talia, 2021) and in the eagerness to control human behaviour (Zuboff, 2019) within the current real that is now an expression of subjective constructions produced in quantity within media platforms, the focus is more directed towards the side of how to educate the 'machine' and create learning systems, in order to improve human performance, than on the side of how and why to educate humans (Cf. Buckingham, 2009; Pedró, Subosa, Rivas, & Valverde, 2019; Rivoltella, Rossi, 2019). Artificial intelligence, and even more so Machine Learning, following the reasoning of this contribution will never be able to replace the free construction of knowledge generated by reflection, improvisation, personal participation in truly lived and shared spaces and places, creativity, and the subjective 'artistic' dimension (Cf. Bruni, 2021b).

From this point of view, research, especially neuroscience, neurobiology and the development of artificial intelligence itself, have sanctioned the overcoming of traditional visions of the mind, in particular its relationship with the brain. Indeed, it is accepted that cognitive capacities do not constitute an absolute guarantee for human and professional fulfilment, least of all if these capacities are the result of programmes, automatisms, memorisation, algorithms.

Education is a complex process, impossible to perimeter and simplify. It passes through the communion of plural alphabets and a new, more articulated encyclopaedia of knowledge, which account for the transformative dynamics taking place in reality and which, above all, respond to ways of thinking and living conceived as exercises in constant research.

It is misleading and counterproductive to limit the issue of education to mere disquisitions around the possession of specific skills, of packages of knowledge deemed necessary, perpetuating the myth of a 'domesticating education'. The profound need of this time and the people of our time lies in the redefinition of an all-round intellectual education.

An education to complex thinking, which passes through a new pedagogy and a didactics deeply rethought, becomes the medicine for the practice of confrontation, openness, decentralisation, discussion, critical deepening that opposes uniformity, the search for polyphonic hypotheses to build and experiment new and different approaches.

The qualitative leap can be given by the ability to integrate disciplinary acquisitions with the emotional dimension of each one, to keep 'heart', 'spirit' and 'hand' united, to recall Pestalozzi (1781-1787; 1825), encouraging a harmonious development of the body, soul and spirit, resorting to methodologies based on exercise and on relations between educator and educand based on affectivity and free creativity. On the teaching side, it is care and relationship that become qualitative dimensions of educational action.¹

References

Boden, M. A. (2018). *Artificial intelligence: A very short introduction*. Oxford, UK: Oxford University Press.

Bonetta G., "Il docente e la cura. Oltre la pedagogia razionale", in *Pedagogia oggi*, 1, 2016, pp. 156-168.

Bonetta, G. (2017). *L'invisibile educativo. Pedagogia, inconscio e fisica quantistica*. Roma: Armando.

Briggs, A., Burke, P. (2005²). *A social History of the Media. From Gutenberg to the Internet*. Cambridge: Polity Press.

¹ In addition to national studies, in particular by De Monticelli (20122), Cambi (2015) and Bonetta (2016, 2017), Bruni (2019, 2022), the work of Heather A. Davis (2003), M.H. Immordino-Yang and A.R. Damasio (2007), P. Prinsloo (2017).

Bruni E.M. (2019), I giovani di oggi e la domanda formativa. *Education Sciences & Society*, 2, 103-122.

Bruni, E.M. (2018). Dalla logofilia educativa alla riscoperta della sorgente formativa. In S. Ulivieri, L. Binanti, S. Colazzo, M. Piccinno (A cura di), *Scuola Democrazia Educazione. Formazione ad una nuova società della conoscenza e della solidarietà* (pp. 559-564). Lecce: Pensa Multimedia.

Bruni, E.M. (2021a). Complessità, pedagogia e i rischi di riduzionismo. *Nuova Secondaria Ricerca*, 38 (10), 80-86.

Bruni, E.M. (2021b). *Ispirarsi alla paideia. I modelli classici nella formazione*. Roma: Carocci.

Bruni, E.M. (2022). The philosophy of education and the educational challenge of complexity. *Paideutika*. 35 (38), 29-40.

Buckingham, D. (2009). The future of media literacy in the digital age: some challenges for policy and practice. *Medienimpulse*,47(2). <https://doi.org/10.21243/mi-02-09-13> (ver. 25.04.2023).

Cambi, F. (2006). *Metateoria pedagogica*. Bologna: Clueb.

Cambi, F. (2015). *La forza delle emozioni: per la cura di sé*. Pisa: Pacini Editore.

Damasio, A.R. (1994). *Descartes'Error: Emotion, Reason and the Human Brain*. New York: G.P. Putnam.

Davis H.A. (2003). Conceptualizing the role and influence of student-teacher relationships on children's social and cognitive development. *Educational Psychologist*, 38(4), 207-234.

De Monticelli, R. (2012). *L'ordine del cuore. Etica e teoria del sentire*. Milano: Garzanti.

Dewey, J. (1938a). *Experience and Education*. Kappa Delta Pi, International Honor Society in Education.

Dewey, J. (1938b). *Logic: The Theory of Inquiry*. New York: Holt, Rinehart and Winston.

Ferraris, M. (2014). *Documentalità. Perché è necessario lasciar tracce*. Roma-Bari: Laterza.

Gardner, H. (2006). *The Development and Education of the Mind. The Selected Works of Howard Gardner*. London: Routledge.

Granese, A. (1990) (a cura di). *La condizione teorica*. Milano: Unicopli.

Han, B.-C. (2021a). *Undinge: Umbrüche der Lebenswelt*. Berlin: Ullstein Verlag.

Han, B.-C. (2021b). *Infokratie*. Berlin: Msb Matthes & Seitz.

Heidegger, M. (1927). *Sein und Zeit*. Halle: Max Niemeyer.

Immordino-Yang M.H., Damasio A.R. (2007). We feel, therefore we learn: The relevance of affective and social neuroscience to education. *Mind, Brain, and Education*, 1 (1), pp. 3-10.

Laporta, R. (1996). *L'assoluto pedagogico*. Firenze: La Nuova Italia.

Liotard, J.-F. (1979). *La Condition postmoderne. Rapport sur le savoir*. Paris: Les Édition de minuit.

Mazzoni, G. (2005⁵). *L'apprendimento. Comportamento, processi cognitivi, neurobiologia*. Roma: Carocci.

Morin, E. (2014). *Enseigner à vivre*. Arles: ACTES SUD/PLAY BAC.

Morin, E. (2017). *Connaissance, Ignorance, Mystère*. Paris: Librairie Arthème Fayard.

Morin, E. (2022). *Réveillon-nous!*. Paris: Denoël.

Nussbaum, M.C. (2001). *Upheavals of Thought. The intelligence of Emotions*. Cambridge: Cambridge University Press.

Pedró, F., Subosa, M., Rivas, A., & Valverde, P. (2019). *Artificial intelligence in education: Challenges and opportunities for sustainable development*. Paris: Unesco.

Pentucci M. (2018). *I formati pedagogici nelle pratiche degli insegnanti*. Milano: Franco Angeli.

Pestalozzi, E. (1781-1787). Lienhard und Geltrud. In *Leonardo e Gertrude*. G. Sanna (trad.it) (1928). Firenze: La Nuova Italia.

Pestalozzi, E. (1825). *Schwanengesang*. In *Il Canto del Cigno*. G. Tarozzi (trad.it.) (a cura di) (1934). *Enrico Pestalozzi. Passi scelti*. Torino: G.B. Paravia & C.

Platone. *Fedone o Sull'Anima*. A. Tagliapietra (20117) (a cura di). Milano: Feltrinelli.

Platone. *La Repubblica*. G. Lozza (1990) (a cura di). Milano: Mondadori.

Prinsloo, P. (2017). Fleeing from Frankenstein's monster and meeting Kafka on the way: Algorithmic decision-making in higher education. *E-Learning and Digital Media*. 14(3), 138–163.

Rescher, N. (1988). *Rationality. A Philosophical Inquiry Into the Nature and the Rationale of Reason*. Oxford: Oxford University Press.

Rivoltella, P.C., Rossi, P.G. (2019). *Il corpo e la macchina. Tecnologia, cultura, educazione*. Brescia: Editrice Morcelliana.

Talia, D. (2021). *L'impero dell'algoritmo. L'intelligenza delle macchine e la forma del futuro*. Soveria Mannelli: Rubettino.

Zellini, P. (2018). *La dittatura del calcolo*. Milano: Adelphi.

Zuboff, S. (2019). *The Age of Surveillance Capitalism. The Fight for the Future at the New Frontier of Power*. New York: PublicAffairs.