AI IN TEACHING FOR A DIGITAL HUMANISM: ETHICAL CONDITIONS, CRITICAL TRAINING OF TEACHERS AND PRIMACY OF THE EDUCATIONAL RELATIONSHIP.

Giuseppe Liverano
University "G. d'Annunzio" Chieti-Pescara
giuseppe.liverano@unich.it

Double Blind Peer Review

Citation
Liverano, G. (2026). AI in teaching for a digital humanism: Ethical conditions, critical training of teachers and primacy of the educational relationship. *Italian Journal of Health Education, Sports and Inclusive Didactics, 10*(3).

Doi: https://doi.org/10.32043/gsd.v1i3.1810

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

gsdjournal.it
ISSN: 3103-5744

ABSTRACT
This article, structured in four sections, outlines the functioning and risks of AI, proposes a principle-based framework for teacher education (from technical literacy to reflective practice), advocates for a human-centered teaching model, and identifies key qualities of teachers (hope, resilience, open-mindedness) that protect against technological determinism. The study concludes that the ethical integration of AI requires reconceptualizing teachers as transformative intellectuals and digital artisans.

KEYWORDS
IA, teacher training, digital humanism, character skills.

Received 30-06-2026
Accepted 17-09-2026
Published 30-10-2026

1. Introduction

The integration of educational technologies, and particularly AI, in schools marks an epistemological discontinuity in the history of teaching aids (Bates, 2015) and of educational practice, which has evolved from the use of analogue supports to that of hyper-technological devices. AI in school teaching is, to all intents and purposes, an entity that proposes itself in a triple role: as an interlocutor for students and teachers, as co-author of strategies, contents and entire training actions, as tutors with personalized support for teachers and students (Luckin, 2018; Berardinetti et al., 2025). The potential of this technology, as a critical extension and cognitive awareness of the teacher himself (Biesta, 2017; 2013), arouses the interest of the pedagogical community on future scenarios and areas of application. This paradigm has favored the overcoming of a traditional dichotomy between apocalyptic and integrated positions (Eco, 1977) that has characterized and polarized the pedagogical debate on the use of AI in schools. It shifts the focus from a sterile antinomy to a constructive and pragmatic questioning of the conditions that favor a pedagogically and ethically based and, consequently, effective use of AI from a didactic point of view, as well as on the devices useful for preventing and mitigating its criticalities. This approach, in fact, introduces a more complex dynamic of AI in the classroom, identifiable through the metaphor of the alien organism, of the symbiote, a biological graft of a non-human nature (Floridi, 2014). To better understand how AI can be used in school teaching, it is good to explain what it can represent to satisfy the noblest goal for man: health and well-being, and for which, in particular cases, it is necessary for humans to host technology inside their bodies. The integration of AI systems into the human body for therapeutic purposes represents a domain of experimental studies characterized by a high degree of confidentiality, not only for technological constraints, but for the importance of the anthropological selection of subjects suitable for hosting this technology in order to make the coexistence between different intelligences compatible: This involves preserving a balance between a subject that presents a mix of sensitivity / rationality and an entity that presents an extreme rationality. In the cases mentioned above, it is a matter of assessing compatibility based on the subject's character and moral nature, therefore identifiable on the basis of an ethical-existential protocol of candidates suitable for hosting AI (Coeckelbergh, 2022). This is in order to minimize the risk of using, in a distorted and self-referential way, technology, which as is now known, is linked with the human being in a symbiosis and in a dialectical and transformative relationship, in a perspective of mutual influence (Zuboff, 2019). This paradigm offers the opportunity for a rereading of the pedagogical debate on the use of AI in school teaching, for which, evidently, training for teachers of a digital, critical (Selwyn, 2022; 2021) and character nature is needed. The use of AI in teaching requires

a selection based on ethical and anthropological compatibility and a professional evaluation of the teacher, his pedagogical skills, his critical conscience and his educational wisdom and maturity. A teacher without pedagogically and ethically grounded training, in the relationship with AI, risks being reduced to a mere executor of algorithms or using technology for purposes that are completely misaligned with the needs and educational trajectories of children (Williamson, 2023). Just as the global medical community identifies the subjects compatible with hosting AI for therapeutic purposes, in the same way the education system should identify rigorous and equally training criteria for teachers who intend to use this technology for educational purposes. The use of AI in school teaching, if it does not take these premises into account, can lead to unpredictable and risky scenarios: in many cases, what can be useful to humans can be just as potentially destabilizing.

2. From definition to classroom integration: understanding AI for its ethical use in school teaching

Fully understanding and explaining, from a technical point of view, what AI is is an effort that requires multidisciplinary cognitive mastery, so we refer to further and more in-depth studies (Yu & Yu, 2021; Corea et al., 2020). Here we will try to exemplify the meaning through metaphors that are more accessible to pedagogical and didactic professionals, most of the time and in the majority, far from the use of a scientific language that uses high-tech research approaches. The integration of AI into teaching is the result of a process that requires critical reflection and implies the achievement of a cultural goal that matures through the understanding of its ethical and pedagogical implications. Interesting, for this hermeneutical effort, is the definition that Russell and Norvig attribute to AI. For scholars, it is "a study or field of investigation of intelligent agents, an entity that receives perceptions from the surrounding environment determining actions as reactions" (2022, pp. 19-23). When we are faced with a simple tool, for example, for the computer, we often do not ask ourselves what material it is made of but what it is for. Suppose we have to teach a child who attends kindergarten to recognize the characteristics of a dog. The teacher will show him photos, describe what a dog is, and show him a picture of something that is not a dog. In this way, first more slowly, then more familiarly, the child, independently, will begin to discriminate the patterns that characterize the animal chosen by the teacher. AI processes in exactly the same way, but in a much faster time. We can, therefore, define it as the ability of a technology to learn from experiences and examples to carry out certain actions and tasks for which human beings use their intelligence. According to Gabriel's definition (2020, p. 412) "AI is the design of artificial agents that perceive their environment and make decisions to maximize the chances of achieving a goal.

In this context, 'machine learning' refers to a family of statistical or algorithmic approaches used to train a model so that it can perform intelligent actions." In order to give more definitions to AI, we have drawn on methodologies and epistemologies from different disciplines, even quite distant from each other in terms of investigation protocols: philosophy, mathematics, economics, neuroscience, psychology, engineering (Ibid., pp. 19-27). It is a specialized technology that is extremely skilled at seeing, discriminating and recognizing, understanding the language of its interlocutor, learning and deciding. The systematic nature of these processes requires that this technology proceeds, however, by procedural phases. In the first one, you receive inputs. In the example of learning to recognize the dog, you will present the AI with photographs of dogs, cats or other animals so that it can see and discriminate the characteristic elements of each animal. The second phase involves processing the information provided to autonomously identify a set of patterns and rules necessary to distinguish the dog from the cat or any other animal (the dog has a longer muzzle than the cat, the dog barks while the cat meows, the dog growls while the cat purrs). The third phase involves applying what he has learned, providing an output, i.e. a hypothesis based on the patterns and rules learned. Any photo will be provided and, based on this photo, the AI will formulate a hypothesis, that is, whether it will be a cat or a dog, through a statistical and probabilistic approach. The more complex and precise you are in administering inputs, the more precise and complex the work that the AI will process. This work will be characterized solely and exclusively by the nature of the inputs. An AI that will be perfect in the game of chess is not certain to be perfect for another game. It will be perfect for chess because it will have received extremely precise input on this game. Due to the complexity that characterizes the management of AI, its use in education and school teaching has raised philosophical questions about how it can align with precise instructions and human values such as transparency, fairness, accountability and loyalty. On the one hand, research is moving in this direction, on the other hand, it is a containment of risks, i.e. an attempt to anthropomorphize AI or to remove it from the observation of a scheme of ethical rules due to the fact that it has neither consciousness nor sensitivity. The effects of these risks could be devastating: a deformed anthropomorphization could generate a perceptual distortion of the AI with a consequent assumption of undue responsibility that could generate abuses of various kinds. The absence of a scheme of moral rules as a reference pattern would risk producing offensive and harmful outputs against the different forms of sensitivity; moreover, a total misalignment with respect to human values could generate outputs capable of undermining the well-being of humankind. Artificial intelligence systems completely unanchored from human control could represent weapons of mass destruction, be deceived by untrue information to the point of causing lethal errors relating to natural events, military issues, and factors affecting the health of mankind. They could

amplify the cultures of prejudice existing in today's societies, increasing inequalities, injustices and the many forms of discrimination already present, with the effect of exacerbating that sense of frustration and violence that governs the peripheries of the world. Think of the future of work. Soon, AI will force millions of professionals to reconvert their professional culture to occupy new roles; when the presence of man is not necessary, he will end up replacing him. Work, however, is not only something that provides resources for sustenance, it is what develops identity in a subject, thanks to which each subject integrates into society, participates in it to improve it. The future development of AI will necessarily have to evolve towards an intelligent architecture capable of metacognitive reasoning and limited output efficiency anchored only and exclusively to patterns of correct information and ethical rules schemes completely aligned with values that represent and characterize the formation of modern man. If there is this evolution, AI will take on an extremely significant value in the process of inclusion in school teaching, so, however, a pedagogical redesign capable of exploiting its potential will need to be envisaged to implement the inclusive style of the teacher, to personalize learning, to develop increasingly innovative knowledge and skills and to prepare students to face increasingly complex real-world challenges. The challenge is to generate a human-centric, pedagogically and ethically guided AI, therefore aimed at expanding human capabilities, not replacing them (Baker, 2016; Luckin, 2018). AI capable of metacognitive reasoning will be able to analyze a student's cognitive processes and identify the reasoning that has generated certain results with respect to a task assigned by a teacher. This will make it possible to identify tailor-made learning paths after revealing misconceptions, ambivalences or cognitive gaps. AI is already able to provide feedback on the analysis of texts written by students to understand their meaning, highlight grammatical aspects, thematic relevance, clarity and writing style, allowing the teacher to focus on deeper aspects of the evaluation (Shermis & Burstein, 2013) such as logical coherence, solidity of argumentation, depth of critical analysis, the originality of the ideas, the reflective maturity, the style of the student, his creativity. There is software on the market based on AI systems that convert text into speech, for students with dyslexia disorder or pedagogical tools that can provide support to students struggling with a challenging task (Woolf et al., 2013). There are many intelligent technologies for speech synthesis, for real-time translation, for speech recognition, to support those students who have special needs.

3. Guidelines for teacher training in the use of AI in teaching from a human-centric perspective

On the basis of the above reflections, it is possible to outline a framework of principles or guidelines for teacher training on the use of AI in inclusive teaching, whose epistemological foundations are not configured as an outcome of a mere prescriptive-normative approach, but emerge from a phenomenological-hermeneutic analysis of the opportunities, criticalities and aporias that have emerged in the relevant scientific literature, which has often considered the perceptions of professionals (Coppi et al., 2025; Galli, 2025; Nirchi et al., 2025; Sicurello, 2025; Bobula, 2024; Jafari & Keykha, 2024; Presti & Zizza, 2024; Ranieri, 2024; Karan & Angadi, 2023). These principles, in addition to those already present in the literature (Dicataldo et al., 2025; Giaconi & Borsini, 2025; Di Martino, 2024; Ferrantino et al., 2024; Fissore et al., 2024; Jeon et al., 2020; De La Higuera, 2019; Vlasova et al., 2019) could foster a deep understanding of the intersection between the theoretical constructs of inclusive pedagogy and didactics and the operational logics of AI. The most evident critical issues concern the dimension of the educational relationship and the care in teaching actions. it is no coincidence that the literature on these dimensions is not particularly extensive. However, if we want to imagine a human-centric anthropological model in which AI supports the teacher in the processes of observation and interpretation of classroom dynamics and for the promotion of care in teaching, it is desirable that training can focus on issues and themes that cannot be waived, namely:

- promote a balanced integration between technical, pedagogical and ethical skills: studies highlight the importance of technical training (Aravantinos et al., 2026; Umanets et al., 2024). However, they require the integration of technical, pedagogical, and ethical-relational training. With regard to the latter dimension, they invite the development of: awareness of the risks and challenges associated with the use of AI Umanets et al., 2024; Dayagbil et al., 2025, developing issues related to bias and promoting fairness through the use of AI Diliberti et al., 2025) and awareness of the need for responsible use (Drigas et al., 2023; Fakhri et al., 2024);
- promote the use of AI as an amplifier of the personalization of training (Bruni & Garista, 2024) in relation to the context and characteristics of each subject: the research highlights how personality traits influence teachers' approach to the use of AI in teaching; it is important that teachers know how to use AI to develop training modules and actions that can meet the needs of each student and know how to generate well-being and reduce anxiety (Yurt, 2025). In addition, it is essential to use technological resources also based on the characteristics of the contexts and are able to adapt to the different characteristics and needs of teachers (Lademann et al., 2026); ensure that AI suggests stimuli and questions to promote reflection aimed at enhancing the authentic relationship, knowledge between subjects, a sense of belonging, diversity, and collegial taking charge of needs;

- enhancing peer learning and a sense of community: knowing how to create virtual learning groups even between subjects from different geographical areas (Renard, 2024), using online platforms, promoting networks of practices Al-Ali & Miles, 2025), knowing how to encourage knowledge sharing and collaborative learning (Diliberti et al., 2025), collective understanding as well as facilitating the shared construction of knowledge with the support of AI;
- promote the continuous connection between training and practice: Designing training actions to experience AI in real-world situations (Nigam et al., 2021; Rott et al., 2022); Putting into practice and transferring what has been learned to the students and then creating the conditions for group reflection;
- promote the centrality of the relationship between teacher and student and care in the relationship and teaching: provide moments to express fatigue and to alleviate anxiety deriving from the use of AI (Wang & Wang, 2024). Provide self-training moments to cultivate confidence and self-efficacy with respect to one's skills. Training to use AI to free up time and energy to devote to authentic relationships with students, care and listening;
  promote collective reflective storytelling on practices: promote the reading and interpretation of practices to critically reflect on mistakes and successes in order to ensure the balance between teaching practices carried out with and without the aid of AI, with the aim of preserving that human sensitivity that is fundamental in the relationship with pupils, in the perception of their needs and in the identification of the best solutions to meet their trajectories of learning.

AI, therefore, can represent a powerful equalizer and catalyst for the inclusion of everyone and, in particular, for students who have particular and specific vulnerabilities, if used with ethical and pedagogical rigor and with the personality and character of those who have developed didactic wisdom. In this way, the use of AI in education will be governed by a vision that sees the educational relationship and care in teaching as horizons of meaning. In order to consolidate an approach of integration and help teachers to become conscious and responsible builders of an inclusive teaching program respecting the primacy of the educational relationship, it is therefore necessary to invest in teacher training also in the direction of implementing the development of character and personality skills.

4. The role of teachers' skills, character and personality in teacher training in the use of AI: a review of the literature

There are many studies that highlight the need for technical and digital skills, pedagogical and ethical skills as fundamental resources for the management and correct use of AI in education and teaching at school - as already highlighted in the previous paragraphs - are many. There is a big gap, however, in the study of how the teacher's character and personality, character and personality skills can influence management and its use at school. For these reasons, a further objective of this contribution was to explore studies focused on understanding the relationship between the development of character and personality skills and the use of AI in teaching, through the adoption of the interpretative paradigm as an option to critically evaluate the selected literature.

4.1 The methodological protocol of the revision.

Since the literature on teacher training in the use of AI is vast (more than 3000 scientific articles), it was decided to adopt an extremely restrictive review protocol based on the date of publication and the specific inclusion and exclusion criteria in order to include only the literature most relevant to the topic.

4.2 Time frame, inclusion criteria, exclusion and selection of studies

The systematic review is characterized by very precise inclusion and exclusion criteria, since they must ensure a selection of studies consistent with the objective of the research. As far as the time frame is concerned, it was decided to consider the period 2020-2026. In particular, the following criteria were considered to include the studies in the review:

- theoretical, scientific articles or literature reviews
- with peer review;
- with a qualitative, quantitative or mixed approach;
- in Italian or English;
- Article titles and abstracts should explicitly refer to the objective of the review;
- they had to refer to the training completed or suggested;
- they had to refer to school teachers, teachers in training and aspiring teachers.

To exclude the studies from the review, the following criteria were considered:

- non-accessible (open access) articles;
- be books or chapters of books;
- without peer review;
- published before 2020;
- they did not concern teacher training and the objective of the revision;
- it did not concern the use of AI in teaching at school;

- in the titles and abstracts there was no reference to the objective of the review;
- they concerned university professors;
- studies on teacher training that did not refer to character and personality skills and their influence on how AI is used in teaching;
- studies on the use of AI in teaching at school.

The aim was to identify and include studies focused on teacher training programmes on the use of AI in education, for which reference is also made (not necessarily predominantly) to the importance of character and personality skills as a resource capable of positively or negatively influencing the effectiveness and acceptance of AI in education. For the research, databases such as Scholar, ERIC, MDPI and ScienceDirect were explored, opting for the succession of the following criteria: date range, year, type of publication. Thorough screening of the literature was necessary to eliminate duplicate studies and remove irrelevant ones, based on inclusion and exclusion criteria. Abstracts and titles of the studies were evaluated before the final selection. The reading of the titles and abstracts produced an initial process of inclusion and exclusion. The initial selection identified 108 studies, then reduced to 92. From these 92 were reduced to no. 63, after the elimination of non-accessible contributions. The 63 articles were assessed as admissible. However, 53 articles were further excluded as irrelevant and only 10 studies were ultimately considered for systematic review.

4.3. Research strategy and method

For the literature review, it was decided to adopt the PRISMA guidelines, adapted to reviews in the field of education. Figure 1 shows the PRISMA flowchart for the selection of studies.

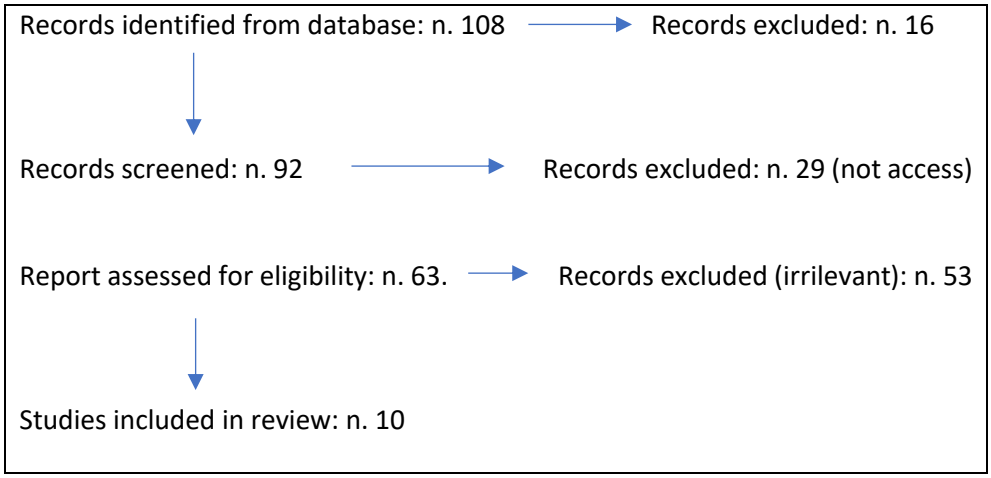


Figure 1: Flowchart Prisma

4.4 Study characteristics

As will be seen, almost all studies are characterized by a mixed or quantitative methodological approach and focus attention on the correlations between the development of personality traits, motivation to use artificial intelligence in teaching and greater or lesser feelings of anxiety and stress. The order of insertion in the table respects the order of extrapolation from the repositories of scientific articles. In particular, the first database used was Scholar, the second ERIC, the third MDPI and the fourth ScienceDirect. Table no. 1 indicates the author of the contribution, the place, the method used and the topic of the study.

Table 1: Characteristics of the study

Author and year	Study Design	Focus study
Cathrin & Wikandaru, 2023	Qualitative (theoretical research)	The study emphasizes the importance of developing character education and artificial intelligence education in a harmonious and balanced way in order to maintain the future sustainability of

		character education in the age of artificial intelligence.
Sümer-Dodur, 2025	Mixed (questionnaires and interviews)	The study highlights the importance of conscientiousness and responsibility towards AI as mitigating factors of anxiety in the use of AI in teaching.
Dere & Doğan, 2025	Quantitative (perception scales, questionnaires)	The study highlights that personal innovativeness, flexible thinking, openness to new technological experiences, and psychological capital are competencies that can encourage teachers to adopt AI for teaching purposes.
Alagöz Hamzaj, 2025	Mixed (questionnaires and focus group)	The study findings indicate a moderate acceptance of AI among future teachers, which varies according to their personality traits: those characterised by higher levels of agreeableness, conscientiousness, and openness to experience showed greater acceptance of AI in teaching.
Bakracheva & Mizova, 2024	Mixed (questionnaires and interviews)	The study highlights correlations between Big Five personality traits (Extraversion, Neuroticism, Openness to Experience, Conscientiousness, and Agreeableness) and the use of digital tools and artificial intelligence, both in teachers' personal lives and in educational contexts, with this influence acting primarily on motivation.
Arpaci et al., 2025	Quantitative (online, questionnaires)	The study indicates that Big Five personality traits, age, and gender predict the educational use of AI in higher education. Significant positive relationships were found between openness to experience, conscientiousness, extraversion, and the educational use of AI. Neuroticism, however, showed a negative association,

		while agreeableness did not show a significant association. The study identified openness to experience as the strongest predictor. Furthermore, the results indicated that the effect of some personality traits on AI use differs significantly between men and women.
Jeong, & Baek, 2025	Quantitative (questionnaire)	The study showed that Big Five personality traits influence the intention to use AI in teaching. In particular, neuroticism and conscientiousness had a positive effect on cognitive overload, which in turn played a mediating role in shaping the intention to use AI in teaching.
Yurt, 2025	Quantitative (questionnaire)	The study indicates significant associations between traits such as openness to experience and conscientiousness and positive motivations for AI use, including intrinsic motivation, utility value, and attainment value. Conversely, neuroticism was positively associated with cost perception, but negatively linked to motivational dimensions. The study results highlight how personality traits influence the motivational processes related to AI use in schools, encouraging teachers to adopt AI in their teaching.
Ding et al., 2025	Mista (Sondaggi, questionari e focus group)	The study results show that openness to experience, extraversion, and AI literacy significantly and positively influence teachers' perceived behavioural control, thereby promoting the use of AI in teaching. Agreeableness reduces psychological barriers, collectively improving the intention to use AI. Neuroticism, on the other hand, has a

		negative impact on behavioural control and a positive effect on psychological barriers, thus inhibiting the use of AI in teaching.
Kilavuz, & Mede, 2025	Mista (Questionario e interviste semi-strutturate)	The quantitative results indicated that openness, conscientiousness, and tolerance of ambiguity significantly influenced teachers' willingness to integrate ChatGPT into their teaching. Individual personality traits influence educators' perception and use of Artificial Intelligence technologies. The study demonstrates that strategies based on personality awareness can promote a more balanced, responsible, and effective adoption of AI in schools.

5. Study analysis and discussion

If AI systems in teaching operate on quantifiable data and process with a probabilistic, therefore statistical, approach, the real risk of transforming learning into a linear process lies in thinking that algorithms - although extremely precise - may represent the only tools for the construction of a truth within the context in which the teaching action takes place. This approach risks generating an epistemological reduction in the process of knowledge and evaluation of learning, as an effect of relying exclusively on algorithms. This involves excluding factors such as motivation and the complexity of a student's inner states that escape AI interpretation. The imperative of performance, which can give rise to an obsessive need to use intelligent systems, because one no longer wants to force oneself to think, risks impoverishing the process of subjectivation that is nourished through reflection on error, the overcoming of certain resistances, the awareness of what happens in the classroom, the critical attitude, the development of identity and through the comparison and encounter that takes place in the processes of school socialization. It risks impoverishing the creativity and imagination of teachers and students. Some studies in this review have shown, however, how open-mindedness is useful for generating complex, creative and original teaching scenarios. The performance perspective risks reducing the most important aspect for teaching, i.e. the relationship, into a model of instrumental and aseptic bonding. As is well known, the authentic educational relationship is based on care (Mortari, 2006), on acceptance, on empathic listening, on the responsibility experienced in

encounter and fruitful dialogue, which cannot be entrusted to an algorithm. Care and responsibility are universal values. The pedagogical intentionality and wisdom of the teacher are crucial to integrate them into teaching and to use them in order to discriminate and understand how to use AI in education and to expand human opportunities and capacities (Floridi, 2017) such as wisdom, creativity, responsibility and compassion. The integration of AI into teaching cannot, therefore, compromise the primacy of the educational relationship between teacher and student. Its use must be inspired by an anthropological model where human relationships are a source of revelation and adaptation to the principles of justice and social equity. It is a matter of being inspired by a digital humanism where technology is not used as a tool for domination and surveillance of a critical mass but as an educational resource managed pedagogically and ethically by a community. It is commonly misguided to think that AI is being ethical. The correct use of AI depends on the sharing of a social ethic, which as such, is shared, as a set of ordering principles and as a compass for the teaching action of teachers supported by AI. It is also important to consider this technology not only in its predictive and prescriptive potential, therefore at the service of a pedagogy of intention, but rather as a descriptive-hermeneutical support, to observe what happens in the classroom and to interpret the dynamics and behaviors of a group and of each individual student in relation to their classmates. Both approaches supported by AI would determine profound implications and complex scenarios that can help teachers build fruitful and stimulating learning environments for students, in which they can share reflections, criticize, encourage the connection of concepts, generate dilemmas, and develop solutions. Processes for which it can be useful to have developed conscientiousness, open-mindedness, friendliness, extroversion, hope, optimism. The integration of AI in teaching stimulates the figure of the teacher to transform himself into a transformative intellectual (Giroux, 2018) and, at the same time, into a digital craftsman, to develop in students, through teaching practices, an algorithmic and digital conscience and awareness and to be able to dominate the narratives generated by technology, become trained digital citizens and act democratically even in the era of the technological revolution. Craftsmanship and intellectuality that are equivalent to knowing how to think and know how to do with full awareness and full maturity, two conditions that require balance and harmony in personality and character. Studies on the relationship between character and personality traits and the use of AI in teaching have shown that this technology requires an anthropological and pedagogical condition in which there is profound balance and harmony, the only way that puts the teacher in a position to humanize the teaching action. Scientific evidence suggests the enhancement of some personality traits as a means to prevent technology from being reduced to a tool of exclusion or cognitive homologation, or to implement its potential as a resource capable of motivating teachers and students to use it. They demonstrated that possessing

non-cognitive skills, values and virtues facilitates the democratic and ethical management of AI. The development of certain character and personality traits could also improve the relationship between teachers and students supported by technology and foster a greater connection based on empathy, for a deep understanding of students' needs and teachers' expectations and for greater attention to the care of each student. It represents a fundamental support for the emotional and ethical intelligence necessary for the teacher to establish a correct and balanced relationship with AI and coordinate the learning environment in an inclusive way (Luckin, 2018). Improper use of AI in inclusive teaching can lead to outputs that are misaligned with the needs of pupils or, in general, with the educational purposes of the teacher or even provide valid inputs for everyone. Possessing hope, self-efficacy and resilience, conscientiousness can be useful for developing the necessary confidence in one's own abilities and in the discretion of one's own judgment, when technology is distorting, to recover the centrality that is due to the educational relationship, not to slip into technological determinism or passively accept information generated by AI. Studies have shown that developing open-mindedness and experience, conscientiousness and prudence is essential for a positive approach to technologies, not to lose that realistic vision of the potential of AI, to operate within a perimeter that guarantees critical analysis, promotes a sense of responsibility in employment, promotes balance and a sense of proportion. Developing conscientiousness, for a teacher who promotes inclusive teaching, is a fundamental resource for planning the actions supported by AI in a careful, rigorous and structured way. Having optimism, extroversion, friendliness and kindness is essential to manage moments of stress in which tensions and relational conflicts could be generated. Possessing amiability, pleasantness and emotional stability is essential to protect that empathy and sensitivity and widespread attention, necessary for the teacher to foster a reassuring environment where no one should feel on the margins, especially when promoting educational actions accompanied by technological innovation.

6. Conclusion

The literature review indicated that AI in teaching is linked as much to digital literacy as to a wealth of skills, character traits and values. He also highlighted that the functionality of this technology depends on the human qualities of the teacher, his character, his personality, his reference values. Research indicates that AI can be really effective for a creative process of content and methodologies and, in general, for raising the quality of pupils' learning, when the input is provided correctly. However, it highlights that the teacher's function of reflecting with his or her students on the meaning and sense of learning and knowledge, when mediated by new technologies, must also refer to a wealth of non-cognitive knowledge, to protect and implement the process of

humanization of educational contexts against the risk of technological relativism that can derive from an improper and unethical use of AI at school. Emerging studies on the integration between teachers, students and technologies show that the usefulness of AI in teaching, from a human-centric perspective, depends on how well it can stimulate reflection. If he can do this, it means that, indirectly, he can also have a positive impact on the relationship, increasing empathy and mutual understanding.

References

Alagöz Hamzaj, Y. (2025). Generative AI acceptance among future educators: personality and behavioral insights. *Educ Inf Technol*, 30, 23165–23188 . https://doi.org/10.1007/s10639-025-13678-3.

Al-Ali, S., & Miles, R. (2025). Upskilling teachers to use generative artificial intelligence: The TPTP approach for sustainable teacher support and development. *Australasian Journal of Educational Technology* , 41(1), 88–106. https://doi.org/10.14742/ajet.9652.

Aravantinos, S., Lavidas, K., Komis, V., Karalis, T., & Papadakis, S. (2026). Artificial Intelligence in K-12 Education: A Systematic Review of Teachers' Professional Development Needs for AI Integration. *Computers*, 15(1), 49. https://doi.org/10.3390/computers15010049.

Arpaci, I., Kuşci, I. & Gibreel, O. (2025). The role of personality traits in predicting educational use of generative AI in higher education. *Sci Rep*, 15, 30440. https://doi.org/10.1038/s41598-025-16339-0.

Baker, R. S. (2016). Stupid tutoring systems, intelligent humans. *International Journal of Artificial Intelligence in Education*, 26(2), 600-614.

M. Bakracheva, B. Mizova (2024). Personality predictors of teachers' attitudes towards digital tools and artificial intelligence, edulearn24 Proceedings, 1973-1979. https://doi.org/10.21125/edulearn.2024.0577

Bates, A. W. (2015). *Teaching in a Digital Age: Guidelines for Designing Teaching and Learning*. Tony Bates Associates Ltd.

Berardinetti, V., Santangelo, F. A., & Traetta, L. (2025). Innovazioni in classe: come l'IA sta trasformando l'insegnamento e l'apprendimento. *Education Sciences & Society,* 15(2). https://doi.org/10.3280/ess2-2024oa18474.

Bobula, M. (2024). Generative artificial intelligence (AI) in higher education: A comprehensive review of challenges, opportunities, and implications. *Journal of Learning Development in Higher Education*, (30).

Biesta, G. (2017). *The rediscovery of teaching*. London-New York: Routledge.

Biesta, G. (2013). *The Beautiful Risk of Education.* New York: Routledge.

Bruni, E.M., & Garista, P. (2024). For a personalised learning experience. The responsible use of artificial intelligence in education. Italian *Journal of Health Education, Sports and Inclusive Didactics,* 8(2).

Cathrin, S., & Wikandaru, R. (2023). The future of character education in the era of artificial intelligence. *Humanika*, 23(1), 91-100.

Coeckelbergh, M. (2022). *AI Ethics*. Cambridge: The MIT Press.

Coppi, A., Guerrini, V., & Barone, S. L. (2025). L'intelligenza artificiale in ambito scolastico: percezione e utilizzo da parte dei docenti della scuola secondaria. Riflessioni da un'indagine esplorativa. *IUL Research,* 6(12), 181-195.

Corea, F., Ferrauto, C. G., Fossa, F., Loreggia, A., Quintarelli, S., & Sapienza, S. (2020). *Intelligenza artificiale. Cos' è davvero, come funziona, che effetti avrà.* Torino: Bollati Boringhieri.

Dayagbil, F. T., Boholano, H. B., & Sumalinog, G. G. (2025, September). Are they in or out? Exploring pre-service teachers' knowledge, perceptions, and experiences regarding artificial intelligence (AI) in teaching and learning. *Frontiers in Education* (Vol. 10, p. 1665205). Frontiers Media SA.

De La Higuera, C. (2019). A report about education, training teachers and learning artificial intelligence: overview of key issues. Education, *Computer Sciences*, 1-11.

Dere, Z., & Doğan, N. D. (2025). Teachers' artificial intelligence use and flexible thinking skills: Evidence from a predictive correlational study. *Journal of Pedagogical Research*, 9(4), 259-280. https://doi.org/10.33902/JPR.202538236.

Dicataldo, M. C., Guerriero, M. A., Lamacchia, M., & Dipace, A. (2025). Intelligenza artificiale e formazione dei docenti di scuola: una revisione della letteratura. *IUL Research,* 6(12), 103-116.

Diliberti, M. K., Lake, R. J., & Weiner, S. R. (2025). More districts are training teachers on artificial intelligence: *Findings from the American School District Panel.*

Di Martino, V. (2024). L'Intelligenza Artificiale in ambito educativo: percezioni dei docenti in formazione iniziale. *Education Sciences & Society,* 2, 88-104.

Ding, N, Chen M, Hu L. (2025). The impact of personality traits and AI literacy on the adoption intentions of AI among design faculty in Chinese higher education. *Acta Psychol (Amst).* Oct;260:105709. doi: 10.1016/j.actpsy.2025.105709.

Drigas, A., Chaidi, I., Papoutsi, C. (2023). The Teacher of the Future. I*nt. J. of Emerging Technologies in Learning,* 18(16), 87–114 DOI: 10.3991/ijet.v18i16.36169.

Eco, U. (1977). *Apocalittici e integrati* (Nuova ed.). Milano: Bompiani.

Fakhri, M. M., Isma, A., Hidayat M., W., Ahmar, A. S., & Surianto, D. F. (2024). Digital Literacy Training and Introduction to Artificial Intelligence Ethics to Realize Digital Literate Teachers: Pelatihan Literasi Digital dan Pengenalan Etika Kecerdasan Buatan untuk Mewujudkan Guru Melek Digital. *Mattawang: Jurnal Pengabdian Masyarakat,* 5(1), 38–47. https://doi.org/10.35877/454RI.mattawang2603.

Ferrantino, C., & Scarano, R. (2024). Formare all'intelligenza artificiale: un progetto-studio con docenti e futuri docenti. *Education Sciences & Society,* 2, 72-87.

Fissore, C., Floris, F., Conte, M. M., & Sacchet, M. (2024, March). Teacher training on artificial intelligence in education. In Smart Learning Environments in the Post Pandemic Era. *Selected Papers from the CELDA 2022 Conference* (pp. 227-244). Cham: Springer Nature Switzerland.

Floridi, L. (2014). *The Fourth Revolution: How the Infosphere is Reshaping Human Reality*. Oxford: Oxford University Press.

Gabriel, I. (2020). Artificial Intelligence, Values, and Alignment: I. *Minds and machines*, 30(3), 411-437.

Galli, F. (2025). L'intelligenza artificiale nella didattica. Opportunità, rischi e regole. *Labour & Law Issues,* 11(2), I.24 - I.50. https://doi.org/10.60923/issn.2421-2695/23590.

Giaconi, C., & Borsini, L. (2025). Nuove sfide per la Pedagogia e la Didattica Speciale: uno studio sulle percezioni dei docenti in formazione sul ruolo dell'IA. *Italian Journal of Special Education for Inclusion,* 13, 34-46.

Giroux, H. A. (2018). Teachers as transformative intellectuals. *Thinking about schools* (pp. 183-189). London: Routledge.

Jafari, F., & Keykha, A. (2024). Identifying the Opportunities and Challenges of Artificial Intelligence in Higher Education: A Qualitative Study. *Journal of Applied Research in Higher Education* , 16 (4), 1228-1245

Jeon, I. S., Jun, S. J., & Song, K. S. (2020). Teacher training program and analysis of teacher's demands to strengthen artificial intelligence education. *Journal of The Korean Association of Information Education*, 24(4), 279-289.

Jeong, S., & Baek, K. (2025). The Effects of Preservice Elementary Teachers' Big Five Personality Traits on Their Intentions to Utilize AI in Teaching. *디지털콘텐츠학회논문지 (J. DCS),* 26(4), 1003-1013.

Karan, B., & Angadi, G. R. (2023). Potential risks of artificial intelligence integration into school education: A systematic review. *Bulletin of Science, Technology & Society,* 43(3-4), 67-85.

Kılavuz, D., & Mede, E. (2025). Embracing the unknown and the novel: Can personality traits shape a teacher's approach to ChatGPT?. *Journal of Pedagogical Sociology and Psychology*, 7(3), 91-107. https://doi.org/10.33902/jpsp.202535337.

Lademann, J., Henze, J., Honke, N., Wollny, C., Becker-Genschow, S. (2026) Teacher training in the age of AI: impact on AI literacy and teachers' attitudes. Front. Educ. 10:1671306. doi: 10.3389/feduc.2025.1671306.

Luckin, R. (2018). Machine Learning and Human Intelligence: The future of education for the 21st century. *UCL Institute of Education Press.*

Mortari, L. (2006). *La pratica dell'aver cura*. Milano: Mondadori.

Nigam, A., Pasricha, R., Singh, T., Churi, P. (2021). A systematic review on AI-based proctoring systems: Past, present and future. *Education and Information Technologies*, 26(5), 6421–6445, 2021. DOI: 10.1007/s10639-021-10597-x.

Nirchi, S., Mangione, G. R. J., De Vincenzo, C., & Pettenati, M. C. (2025). Indagine esplorativa sulla percezione dei docenti neoassunti circa l'impiego dell'intelligenza artificiale nella didattica: punti di forza, ostacoli e prospettive. *Journal of Educational, Cultural and Psychological Studies* (ECPS Journal), 30, 151-180.

Presti, F. L., & Zizza, S. (2024). L'uso delle nuove tecnologie nei percorsi didattici e di formazione. Possibilità di sviluppo e versanti critici. *Nuova Secondaria,* 41(6).

Ranieri, M. (2024). Intelligenza artificiale a scuola. Una lettura pedagogico-didattica delle sfide e delle opportunità. *Rivista di Scienze dell'Educazione*, 62(1), 123-135.

Renard, L. 2024). *8 Essential Skills of the Teacher of the Future.* [Online]. Available: https://www.bookwidgets.com/blog/2017/02/8-essential-skills-of-the-teacher-of-thefuture?fbclid=IwAR1ETNHO8AuGcqfQ0eJ46xBxBR4OtfxB5Pneo32NubzROdMI61D XiBLmSfU. [Accessed: Feb. 9, 2024].

Rott, K. J., Lao, L., Petridou, E., & Schmidt-Hertha, B. (2022). Needs and requirements for an additional AI qualification during dual vocational training: Results from studies of apprentices and teachers. *Computers and education: Artificial intelligence*, 3, 100102.

Russell, S., & Norvig, P. (2021). *Artificial Intelligence: A Modern Approach* (4th ed.). Pearson.

Selwyn, N. (2022). The future of AI and education: Some cautionary notes. *European Journal of Education,* 57(4), 620-631

Selwyn, N. (2021). *Education and technology: Key issues and debates.* New York: Bloomsbury Publishing.

Shermis, M. D., & Burstein, J. (Eds.). (2013). *Handbook of automated essay evaluation: Current applications and new directions*. London: Routledge.

Sicurello, R. (2025). L'uso dell'IA tra rischi ed opportunità nell'ottica di un'educazione equa ed inclusiva per tutti. *Italian Journal of Special Education for Inclusion,* 13(1), 331-345.

Sümer-Dodur, H. M.2025. "Special Education Pre-Service Teachers' Conscientiousness and Their Attitudes Towards Artificial Intelligence: The Mediating Role of AI Literacy and AI Anxiety." *European Journal of Education*, 60,(4), 70276. https://doi.org/10.1111/ejed.70276.

Umanets, V., Shakhina, I., & Rozputnia, B. (2024). Training future computer science teachers to use artificial intelligence technologies in the educational process. *Modern Information Technologies and Innovation Methodologies of Education in Professional Training Methodology Theory Experience Problems*, 72, 162-169.

Vlasova, E. Z., Avksentieva, E. Y., Goncharova, S. V., & Aksyutin, P. A. (2019). Artificial intelligence-The space for the new possibilities to train teachers. *Espacios*, 40(9), 17.

Wang Y and Wang X (2024) Artificial intelligence in physical education: comprehensive review and future teacher training strategies. *Front. Public Health* 12:1484848. doi: 10.3389/fpubh.2024.1484848.

Williamson, B. (2024). The social life of AI in education. *International Journal of Artificial Intelligence in Education*, 34(1), 97-104.

Woolf, B. P., Lane, H. C., Chaudhri, V. K., & Kolodner, J. L. (2013). AI grand challenges for education. *AI Magazine*, 34(4), 66-84.

Yu, S., & Lu, Y. (2021). *An introduction to artificial intelligence in education*. Singapore: Springer.

Yurt, E. (2025). The interplay between Five-Factor personality traits and AI use motives in Turkish pre-service teachers: A canonical correlation analysis. *Curr Psychol*, 44, 13756–13773 https://doi.org/10.1007/s12144-025-08175-2.

Zuboff, S. (2019). *Il capitalismo della sorveglianza. Il futuro dell'umanità nell'era dei nuovi poteri.* Roma: Luiss University Press.