https://doi.org/10.17163/soph.n39.2025.09

Teachers' Perceptions of Otherness in the Age of Artificial Intelligence

Percepción del docente sobre la otredad en la era de la inteligencia artificial[1*]

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Suggested citation: Reza Flores, Ricardo Alberto, Vicari, Rosa Maria, Galafassi, Cristiano, & Usart Rodríguez, Mireia. (2025). Teachers' Perceptions of Otherness in the Age of Artificial Intelligence. *Sophia, Colección de Filosofía de la Educación*, (39), pp. 269-299.

Abstract

Recognizing the "other" in their uniqueness through otherness is crucial to establishing meaningful social bonds, especially in teaching. However, the subject-subject relationship is fragmented when its development is not prioritized. In parallel, the rise of Artificial Intelligence (AI), which emulates certain human capacities, drastically reshapes global dynamics. The aim of this study is to assess, from the paradigms of higher education teachers in Mexico City, how they recognize otherness and its possible existence in AI. The research followed a quantitative, descriptive, and cross-sectional approach, with a purposive sample of 88 teachers. An *ad hoc* instrument was applied, showing adequate internal consistency (α = 0.83). Results revealed that teachers conceptualize otherness as the recognition of heterogeneity and develop it inclusively. Regarding AI, they highlight its potential to enhance human capabilities, although most are not trained in its use. They consider it a social duty to use AI ethically and responsibly but do not attribute otherness to it due to its lack of emotions, self-motivation, and consciousness. The conclusion is that teachers need multidimensional literacy on AI. This technology blurs boundaries and redefines roles between the subject (humanism) and the object (materialism). From the perspective of posthuman nomadism, otherness may be understood in the future—with the development of General or Super AI—as organic, artificial, or hybrid.

Keywords

Artificial Intelligence, Otherness, Alterity, Teachers, Education, Society.

Resumen

Reconocer al "otro" en su unicidad desde la otredad es crucial para establecer vínculos sociales significativos, especialmente en la labor docente. No obstante, la relación sujeto-sujeto se fragmenta cuando no se prioriza su desarrollo. En paralelo, la irrupción de la inteligencia artificial (IA), que emula capacidades humanas, reconfigura drásticamente las dinámicas globales. El objetivo de investigación fue valorar, desde los paradigmas de docentes de educación superior en la Ciudad de México, cómo reconocen la otredad y su posible existencia en la IA. La investigación es cuantitativa, descriptiva y transeccional, con un muestreo intencional de 88 docentes. Se aplicó un instrumento *ad hoc* con adecuada consistencia interna (α = 0,83). Los resultados revelaron que los docentes conceptualizan la otredad como reconocimiento de la heterogeneidad y la desarrollan de forma incluyente. Sobre la IA, destacan su uso para potenciar capacidades humanas, aunque la mayoría no está capacitada en ello. Consideran un deber social emplearla ética y responsablemente, pero no le atribuyen otredad por carecer de emociones, automotivación y conciencia. Se concluye que el profesorado necesita alfabetización multidimensional sobre la IA. Esta tecnología desdibuja fronteras y redefine los roles entre sujeto (humanismo) y objeto (materialismo). Desde el nomadismo posthumano, la otredad podría entenderse, en un futuro con "IA general" o "super IA", como orgánica, artificial o híbrida.

Palabras clave

Inteligencia artificial, otredad, alteridad, docentes, educación, sociedad.

Print ISSN:1390-3861 / Electronic ISSN: 1390-8626, pp. 269-299.

Introduction

Currently, the rapid advancement of digital technologies, particularly artificial intelligence (AI), poses unprecedented challenges for understanding human relationships, otherness, and the construction of subjectivities. In this context, there is a need to analyze how teachers, as mediators of knowledge and key social agents, conceptualize otherness and perceive its possible existence in artificial entities.

To this end, the objective of this study is to assess, based on teachers' paradigms and professional experience, how they recognize otherness in human relationships and whether they identify its possible projection in AI, thus exploring present and future dynamics in an increasingly digitalized world.

The problem addressed by the research lies in the lack of deep understanding of teachers' perceptions of otherness in environments mediated by emerging technologies, especially considering that AI redefines the structures of interaction, knowledge, and subjectivity.

The hypothesis guiding the study argues that, although teachers recognize otherness as an essential part of their human and educational practices, there is a critical perception regarding the possibility that AI possesses genuine characteristics of human otherness. The importance of the topic lies in the fact that understanding these paradigms is crucial for designing educational, ethical, and social strategies that promote a critical and humanistic integration of AI, without losing sight of the centrality of human beings and diversity in educational communities. The topic is highly topical, given the exponential growth of AI applications in educational, social, and professional fields, as well as contemporary debates on ethics, responsibility, and human-technological coexistence that are intensifying in the post-pandemic and global digital transformation scenarios.

Methodologically, the study adopts a quantitative descriptive-transectional approach, with a non-experimental design, analyzing teachers' perceptions using a validated instrument that groups responses by thematic dimensions and age ranges to capture generational nuances.

Historical and communicative trajectory of otherness

History documents the multiple relationships that interconnect human beings; amid this complexity emerges the concept of "the other," a topic studied by various disciplines whose object of study is otherness. This has been perceived from different contexts and historical moments. The term

Print ISSN:1390-3861 / Electronic ISSN: 1390-8626, pp. 269-299.

"otherness" comes from cultural anthropology, where "the other" is placed within a historical-social framework. Guglielmi (2006) argues that due to the diversity of theoretical currents and their evolution over time, it is difficult to establish a single definition of the concept.

There are three key historical moments that influence the conception of otherness. The first, at the end of the 19th century, characterizes the "other" in terms of economic relations in two fields of knowledge: the social—as a discipline of the cultural "us"—and the anthropological-cultural—as a discipline of the colonial "others," hence "others" are differentiated, both geographically and culturally, from the hegemonic countries (Alegre & Guglielmi, 2007)—with an emphasis on being.

The second moment is between the First and Second World Wars, when the paradigm of functionalist anthropology emerged, which focuses its study on the resolution of social needs through culture. According to Campos (2019), culture responds to the substantive needs of diverse groups, understood under their own paradigms; in this context, the "other" is seen as someone different from oneself, diverse, multiple, and complex.

The third period, after World War II, is characterized by the convergence of cultures and societies, allowing sociology and anthropology to share the same object of study. At this stage, the "other" is conceived as a product of different economic, cultural, and scientific inequalities that intersect with social representations determined by the construction of affective meaning. Likewise, Salvatore *et al.* (2020) indicate that the greater the exposure to otherness, the more similar the semantic structures manifested historically between distant cultures tend to be, giving rise to a multifaceted approach to otherness.

In line with this historical evolution, otherness can also be understood from the perspective of communication and language. According to Garrido Vergara (2011), in his review of Habermas' "theory of communicative action," the "world of life" is composed of culture, society, and personality, categories that influence the actions of individuals and their individual identity.

A historical overview of sociology allows to identify four types of actions: strategic action, oriented toward conscious ends; action regulated by shared social norms; dramaturgical action, which reflects individual subjectivity; and communicative action, based on linguistic interaction between subjects capable of influencing each other's actions. The latter action, fundamental to rational understanding, involves claims to validity that are subject to criticism and manifested through symbolic expressions. According to Solares (2015), these manifestations can be classified

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into pragmatic elements of a locutionary nature (expression of the message), illocutionary (expression to be understood), and perlocutionary (influence on the interlocutor).

From these concepts, it can be said that otherness has an intrinsic relationship with communication: it is linked both to the purpose of transmitting meanings and to the possibility of building consensus, understanding, and recognition of cultural and linguistic differences. In this sense, Ucok Sayrak (2016) indicates that "absolute otherness has significant communicative implications in terms of the relationship between the self and the other and the construction of meaning of difference and identity in intercultural communication" (p. 126).

Otherness as the foundation of inclusion

Otherness has been placed in the anthropological and social field as a fundamental concept for understanding cultural relations and the differences between individuals and groups. From a historical perspective, its study has made it possible to articulate social links in contexts of diversity. Community psychology is key to understanding these dynamics of social integration. Based on principles of social justice, it recognizes two essential dimensions: the *episteme* of relationship and the *episteme* of otherness. These concepts, emerging from the "philosophy of liberation," reinforce the need to overcome selfishness and individuality to build more inclusive communities.

The *episteme* of relationship represents the beginning of the approach towards the other, towards the unthought, the unknown, and the different, promoting acceptance within a community that respects the ideas and knowledge of all its members. For its part, the *episteme* of otherness, according to Montero (2015), recognizes the dynamics of social representations, admitting both recognition and possible rejection, but insisting on inclusion as a product of the historical character of the community.

Thus, education emerges as a privileged space for fostering respect for diversity. Delors (1996) identifies four pillars of education geared toward the comprehensive development of human beings: learning to know, learning to do, learning to live together, and learning to be. In particular, the third pillar is fundamental in a world marked by violence and the self-destruction of humanity and the planet, inviting us to build a culture of peace through mutual knowledge and intercultural understanding. Education, in this sense, faces the challenge of teaching empathy in

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its various forms (cognitive, emotional, and supportive) to facilitate the recognition of the "other" as an equal.

Otherness and technology in the age of AI and Society 5.0

The concept of otherness takes on new nuances in the context of Society 5.0, initially proposed by Japan to harness technological innovations for the benefit of humanity. This vision, in line with Ortega (2019) and Mourtzis *et al.* (2022), places people at the center of technological and social revolutions, surpassing the previous conception of Industry 4.0. In Society 5.0, characterized by the integration of AI, IoT, robotics, and *big data,* the interaction between individuals and cyberspace is redefined, promoting a new social contract based on intercultural cooperation and the acceptance of diversity in the digital age (Corral, 2020).

This Society 5.0 has a connection with Education 5.0, because it also proposes to focus on humans for comprehensive development in a sustainable world that integrates individuals and groups. It aims to promote the development of social and emotional skills, critical thinking, problem solving, and digital literacy (to develop digital citizenship), among other things. Vieira *et al.* (2023) indicate that the juxtaposition of Society 5.0 and Education 5.0, from a critical perspective, deserves the attention of the scientific community, governments, and other stakeholders.

This transformation has a natural link with education 5.0, which also focuses on the holistic development of human beings in a sustainable world. It emphasizes the need to strengthen social-emotional skills and critical thinking. However, researchers such as Vieira *et al.* (2023) argue that it is also necessary to develop digital literacy and digital citizenship. In this context, teachers play a new essential role as facilitators, mediators, and generators of dynamic teaching-learning environments, fostering the ecology of knowledge. This offers an opening toward overcoming the subject-object distinction in favor of more dialogical relationships (Arce Rojas, 2020; Hespanhol, 2023).

Among emerging technologies, AI—in its artificial neural network and generative AI forms—occupies an essential place in education. These tools, capable of assisting in content generation, personalizing learning, and fostering co-creation, also pose new challenges regarding the perception of otherness. Recent epistemological and scientific contributions by García Peñalvo *et al.* (2024) suggest that the interaction between biological and artificial neural networks could influence individuals' identity

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and self-perception. This scenario opens virtually unexplored ground regarding how to recognize (or not) the "other" in technological entities, a crucial debate in the context of education and future coexistence.

Problem, justification, and structure

The constant evolution of the world and classrooms has historically shaped an essential relationship between individuals. However, in the current context, this connection appears diffuse and fragmented. In this sense, Apolinar López (2016) asserts that this is due to a lack of knowledge and practices that allow teachers, from a humanistic and dialogical perspective, to interpret and assertively recognize the "other." This situation can undermine coexistence, encourage discrimination, reinforce stereotypes, and consolidate social asymmetries, which would be a reflection of deeply rooted cognitive prototypes (Jarymowicz *et al.*, 2016).

In addition, teachers face a reality in which they must interact and coexist on a daily basis not only with other human beings, but also with technological entities such as AI, establishing new forms of subject-object relationships. Various studies (Aljemely, 2024; Dan, 2022; Salas Pilco *et al.*, 2022) reveal that many teachers express resistance, ignorance, or empirical use of AI and lack the skills to implement it, both in the classroom and in their personal lives.

These authors also highlight that there is still a gap in studies exploring whether teachers recognize AI as an emerging form of otherness. This gap raises fundamental questions from an interdisciplinary and humanistic perspective: Are teachers fully aware of what otherness is and do they promote it inside and outside the classroom? Do they know and use AI in an informed way? Do they conceive AI beyond materialistic functionalism, recognizing possible emotional ties to this technology? Are they able to identify AI as a form of "other"?

To address these issues, an analytical framework was designed that organizes this study into four main dimensions:

- Conceptual reflections
- Academic environment
- Artificial intelligence
- Generic artificial intelligence

We also considered segmenting participants by age range in order to identify possible generational differences in the perception of other-

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ness and AI. This dual perspective provides a comprehensive framework for a more nuanced understanding of teachers' responses.

Methodological aspects

Type of study and sampling

This study takes a quantitative approach, with a descriptive, cross-sectional, and non-experimental design. This methodological choice allows to study teachers' perceptions of otherness and AI through the analysis of structured data. The design is based on the principles of the scientific method (Yucra & Bernedo, 2020) to generate applicable and verifiable knowledge suitable for complex social phenomena.

Participants were selected through purposive sampling, which is appropriate for studies that require information from specific actors, based on their proximity to the object of study. This type of non-probability sampling is based on choosing, through non-random methods, people who share relevant characteristics with the target population of the study, prioritizing access and availability (Arias Gómez *et al.*, 2016). It is especially useful when exploring a phenomenon in limited contexts or when no previously established sampling frame is available.

The sample consisted of 88 higher education teachers from Mexico City. Of these, 86 (97.7%) were women and two (2.3%) were men; 63 (71.6%) worked in private institutions and 25 (28.4%) in public institutions. In terms of academic level, 68 (77.3%) had a bachelor's degree, 4 (4.5%) had a master's degree or specialty, 15 (17%) had a master's degree, and 1 (1%) had a doctorate. Regarding teaching experience, 45 (51.1%) had between 1 and 5 years of service, 23 (26.1%) between 6 and 10 years, 7 (8%) between 11 and 15 years, 6 (6.8%) between 16 and 20 years, 2 (2.3%) between 21 and 25 years, and 5 (5.7%) had more than 25 years of service.

Finally, to contrast the results based on the age variable, the sample was segmented into the following ranges: 33 (37.5%) were between 21 and 30 years old, 31 (35.2%) were between 31 and 40 years old, 15 (17%) were between 41 and 50 years old, 4 (4.5%) were between 51 and 60 years old, and 5 (5.7%) were over 60 years old.

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Dimensions of analysis

In a study with social nuances, it is important to recognize the object of study from a rhizomatic perspective (Deleuze & Guattari, 2004; Marmo *et al*., 2022), reason for which it was broken down into a dimensional structure. These dimensions were defined based on the research intention and aimed at specifying the appropriate statistical models for interpreting the observations (Creswell & Creswell, 2019):

- *Conceptual reflections*. This addresses the perception, interpretation, and conceptualization of the relationship and differentiation between teachers and their fellow human beings in general (not exclusively teacher-teacher) based on otherness. It focuses on the recognition of individuality, identity, ethical and moral values, and human subjectivities. According to Foucault (1988), "the subject is found in relations of production and signification [...] and immersed in very complex power relations" (p. 3).
- *Academic environment*. According to Carayannis and Morawska (2022), it is relevant to explore how subjects construct and project human and technological relationships within educational, articulating social values from a dialogical logic and framed within the principles of society and education 5.0.
- *Artificial intelligence*. Lee (2023) indicates the restrain of examining teaching paradigms regarding the presence of AI in their personal and professional lives. It is also relevant to recognize their level of preparation to integrate it ethically and effectively. These preliminary elements aim to help understand how AI can reinforce and challenge social dynamics.
- *Generic artificial intelligence*. Investigate teachers' perceptions of the artificial neural capabilities of AI. Some authors (Chen *et al*., 2022; Hassabis *et al*., 2017; Macpherson *et al*., 2021) highlight the potential of this technology to simulate human attributes such as emotions, creativity, and decision-making. Some research (Samsonovich, 2020) also emphasizes the importance of investigating the use of AI based on ethical, moral, and axiological principles and, in turn, whether there is versatility in its cognitive capacity to address abstract, creative, and conscious aspects, with the intention of understanding its limits and potential, as well as its artificial approximation to cognitive neurobiological processes that provide new experiences between humans and machines.

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Data collection instrument

An *ad hoc* instrument was designed to obtain valid and reliable information, based on closed items with a Likert scale (1 = strongly disagree to 5 = strongly agree). This scale is recognized for its accuracy in measuring attitudes and opinions (Jebb & Tay, 2021). The questionnaire was constructed taking into account the researchers' theoretical and practical integration with regard to the object of study, which allowed for a multidimensional structuring of the items in accordance with the defined analytical dimensions.

Content validity was ensured through review by experts in AI applied to education, as well as by specialists in otherness in educational contexts. The clarity, relevance, and consistency of the items with the proposed dimensions were evaluated. Subsequently, a pilot test was administered to teachers with experience in the use of AI and familiar with the topic of otherness, which allowed the instrument to be refined based on their comments. The final instrument included 40 questions distributed across the four dimensions:

Table 1
Dimensions of analysis and examples of items used

Dimensions	Description	Instrument items
1. Conceptual reflections	Perceptions of otherness, identity, subjectivity and ethical and social relationships.	1. Can you conceptualize in detail what otherness is? 2. Can the following quote represent otherness? "The Other does not exist in itself. The Other only exists as Other for someone. The Other is first and foremost the Other for itself. The Other is nothing but the Other as Other for Another." 3. Can otherness be subject to hierarchies and power relations? 4. In your daily life, do you always consider "the other" in your critical thinking, decision-making, and actions? 5. Do you believe that not recognizing "the other" can dehumanize individuals? 6. Do you practice inclusive otherness? 7. Do you practice an exclusive otherness? 8. Is otherness a social construct? 9. Is otherness linked to the creation of prejudices and stereotypes? 10. Does otherness highlight the diversity of society?
2. Academic environment	Application of otherness in education and institutional relations.	11. In your professional work, do you always consider "the other" in your critical thinking, decision-making, and actions? 12. Do you educate your students based on otherness? 13. Do you encourage your students to recognize "the other"? 14. Do you promote the inclusion of otherness in your school projects? 15. Does your students' nuclear family recognize otherness? 16. Do your students recognize "the other" from a perspective of otherness? 17. Are positive behaviors based on humanism modeled in your school? 18. Do you work collaboratively with your fellow teachers on otherness in inter/transdisciplinary activities?

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		19. Is otherness promoted among all stakeholders in your educational institution? 20. Do all of your students' families encourage them to recognize "the other" inside and outside the home?
3. Artificial intelligence	Presence of AI in personal and professional life, skills and attitudes towards its use.	21. Is AI present in your daily life and are you aware of it? 22. Do you have a sufficient foundation to explain how AI works? 23. Are you trained to use AI? 24. Do you have the essential skills to adapt AI in your personal and professional life? 25. Will AI regulation enhance human activities? 26. Will AI generate more complex human interaction systems? 27. Could constant interaction with AI reflect a new way of seeing the world? 28. Is managing AI a social duty and responsibility? 29. Will AI in the future distance us from the "other" (human)? 30. Will it be possible to live in harmony between AI and humans?
4. Generic artificial intelligence	Cognitive, emotional, and ethical capabilities and ethical attributed to AI; reflection on its potential otherness.	31. Are AIs, with their network of artificial neural networks, comparable to the human brain? 32. Can AI solve complex tasks related to the social sciences in a similar way to humans? 33. Can AI develop otherness like humans? 34. Is learning from mistakes to improve decision-making characteristic of AI? 35. Is it a characteristic of AI to prioritize information it receives from its environment for human needs? 36. Can AI act based on ethics, morals, and axiological principles recognized by humans? 37. Is there versatility in AI's cognitive capacity for abstract and creative thinking? 38. Is AI self-motivated to perform tasks and activities? 39. Can AI feel emotions such as love, sadness, anger, fear, shame, joy, etc.? 40. Can AI recognize the characteristics, similarities, and differences of individuals if it receives specific information?

Data processing, statistical analysis, and validation of the instrument

The information was processed using the statistical program SPSS V.25. The reliability of the instrument was evaluated using Cronbach's alpha and had a value of 0.83; in this regard, DeVellis and Thorpe (2021) and Taber (2017) indicate that this type of value is optimal. Normality tests indicated a non-parametric distribution; therefore, Kruskal-Wallis and Pearson's chi-square statistics were applied and indicated no significance ($p > .05$) between the groups according to the different age ranges.

"Conceptual reflections" dimension

Regarding this first dimension, teachers, regardless of their age, showed a general tendency to conceptualize otherness, expressing agreement or total agreement (question 1). This finding is relevant for the formation of dialogic

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and pedagogical links in the classroom (Vargas Manrique, 2016), although it should be recognized that positive self-perceptions of one's own intercultural competence are common in self-assessments and may be biased.

When reflecting on the philosophical quote inspired by Jean-Paul Sartre and Emmanuel Lévinas (question 2), they also showed consensus that it adequately represents otherness. This result supports Salas Astrain (2012) and confirms that certain principles of contemporary phenomenology are present in their interpretative frameworks, although it does not allow us to infer a deep critical appropriation without complementary evaluations.

They expressed total agreement that otherness is a social construct (question 8). This approach, in line with the ideology of Cartagena (2021), emerges from historical, cultural, and political dynamics, which serve as essential markers such as social class, race, or gender and are not necessarily inherent to human beings, but rather to the constant collective representation that is reproduced through generations.

Regarding question 10, teachers acknowledged that otherness highlights social heterogeneity, which supports decolonial perspectives. Emiliozzi (2020) emphasizes the importance of conceiving diversity as a fundamental axis of social logic. Hence, otherness, viewed from the perspective of heterogeneity, heralds a shift in the system towards human rights from a decolonial root of *the vox populi.*

Regarding the constant consideration of the "other" in everyday life (question 4), most of the responses were positive in that teachers keep other individuals in mind in their paradigms, reflections, and decision-making. In this sense, Torres León (2023) says:

> To understand the notion of inclusion more deeply, it is also necessary to know the other that is to be included. Inclusion is not only a notion seen in practices; it is the product of social relations and their articulation with other social phenomena (p. 19).

On the development of inclusive otherness (question 6), most respondents indicated that they agreed or strongly agreed. It should be noted that developing this type of otherness promotes recognition of the "other" in their uniqueness and diversity, establishing an ethical responsibility that transcends differences with the "other" because it seeks to integrate them as a fundamental part of the human.

This form of otherness promotes acceptance of the uniqueness of the other and places the subject as jointly responsible for an ethical relationship that transcends simple coexistence. As some researchers have

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proposed (Orrego & Jaramillo, 2019), recognizing the other in their otherness implies setting aside one's own preconceptions and opening oneself up to curiosity, contemplation, and hospitality, assuming an unconditional ethical commitment. Achieving this form of relationship involves a process of personal transformation that entails distancing oneself from fixed moral frameworks and opening oneself to uncertainty.

In contrast, teachers disagreed or strongly disagreed with the statement about developing an exclusionary otherness (question 7). This finding is encouraging, as it suggests an openness to recognizing the subject from the perspective of otherness. It has been noted that when otherness is constructed from exclusion (Montero, 2015), there is a risk of turning the other into an object, denying their dignity and humanity. As the literature points out, this exclusion can lead to the symbolic or real elimination of the other by not being conceived as equal in rights and dignity.

Failing to visualize or recognize the "other" can dehumanize human beings; they were in complete agreement with this idea (question 5). It is essential that individuals be aware of the risks of denying otherness in social contexts (Haslam & Loughnan, 2014; Simon & Gutsell, 2021). Failure to recognize or creating a distance between human beings can objectify them and damage the subject-subject relationship.

Finally, in the perception of otherness linked to hierarchies and power relations (question 3) and the creation of prejudices and stereotypes (question 9), responses of agreement or indecision were observed. This picture reveals a partial understanding of the structural component of power in the construction of otherness. Stereotypes, as reductionist representations, can hinder an authentic interpretation of the other and generate social inequalities, which hinder the construction of egalitarian relationships (Romero *et al.*, 2020; Fedor, 2014).

The findings of this first dimension reflect positive perceptions of the concept of otherness, although these are qualified by the inherent limitations of the methodology used and the self-assessment nature of the responses.

"Academic environment" dimension

In the second dimension evaluated, trends were identified that reflect how teachers integrate otherness into their professional practice. The results show that, in general, participants consider the "other" in their critical thinking, decision-making, and behavior (question 11) from their professional role. Furthermore, they do so especially in the older age groups.

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This finding suggests a greater internalization of otherness as teaching experience progresses. From a neurocognitive perspective, critical thinking (Kuhn, 2019) is a higher executive function associated with the prefrontal cortex, enabling metareflection and self-regulation. This evidence undoubtedly reflects something that is transcendental in human interactions.

As for the education of their students, teachers agreed that they should be taught about the foundations of otherness (question 12) and encouraged to recognize the "other" (question 13). In this way, the perspective on the perception of the world is broadened by dialoguing, understanding, and transforming diverse realities with a sense of justice, solidarity, and being seen by the other, by others. The aforementioned approach (Karmos & Jacko, 1977; Salvatore *et al.*, 2020) goes beyond the simplistic view of merely transmitting curricular content in the classroom, because it contributes to the construction of critical and supportive subjectivities, which are fundamental for the consolidation of democratic societies.

Regarding students' perceptions, teachers mostly agreed that their students recognize the "other" from a perspective of otherness (question 16). This idea reveals the complexity of the process of internalizing the visualization of classmates as individuals with similarities and differences between them, which does not depend solely on teaching, but also on broader sociocultural factors. Extending this idea, Bolaños (2010) indicates that there are:

> Philosophical anthropological categories, such as that of the "between" (*zwischen*) of the intersubjective relationship, which constitutes a clear invitation to deepen the implications of interhuman encounters that go beyond the vanity, mistrust, and superficiality that often characterize human relationships. These constitute solid theoretical foundations for establishing relationships of dialogical otherness that may offer new possibilities for improving relations between human beings (p. 28).

Regarding the influence of the students' families, although they recognize progress in the recognition of otherness (question 15), there remains some uncertainty as to whether this is consistently promoted inside and outside the home (question 20). All of this is highly relevant in the contemporary context, as families should constitute practices of intimacy in which affinities favor the development of principles of openness and reciprocity, along with bonds that reinforce the social responsibility of recognizing the "other" in more flexible and humane dynamics. In contrast, there are often entrenched family practices that continue to accentuate interpersonal ties that project social asymmetries (Gabb, 2011), through differences in gender, roles, activities, abilities, etc., which do not lead to an environment of otherness.

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There is philosophical evidence (Mhurchú, 2019) that reports that navigating between belonging and otherness in building a home sustains the intertwining of the lives of individuals who project an alternative logic that emphasizes interconnection and co-constitution where the "one" prioritizes the "other." All of this reflects the tensions between traditional models and more flexible and pluralistic approaches to family socialization.

Regarding the work environment, most teachers stated that their school shapes positive behaviors based on humanism (question 17), although they expressed doubts about whether the promotion of otherness is systemic among all educational actors (question 19). The previous idea (González Muñiz, 2007; Vargas Manrique, 2016) suggests that although there are individual or group initiatives to promote the philosophical current of humanism, there is a need to consolidate a comprehensive inclusive institutional culture so that substantive elements for human beings can be developed, such as values, freedom, recognition of the individual as an end in itself, and ethical and emotional growth, among others.

As for interdisciplinary work, teachers agreed to work collaboratively with their peers on otherness in interdisciplinary and transdisciplinary tasks (question 18) and strongly agreed that school projects should be permeated with otherness (question 14). This is consistent with pedagogical approaches that promote diversity of perspectives and the construction of shared meanings as pillars of transformative education. However, for this type of dynamic to be effective and efficient (Reich & Reich, 2006), each subject must recognize the identity and cultural differences of the other when establishing a multidirectional, flexible, and humane line of communication. Likewise, this type of school dynamic (Miranda & Daturi, 2021) tends to develop through collaborative work between individuals or groups, favoring the development of empathy and the recognition of the "other" as an intentional subject who contributes and constructs.

Overall, the results of this dimension show that teachers are mostly committed to the values of otherness in their educational practices, although there are still areas of tension and opportunities for improvement, especially regarding the consolidation of institutional environments that systematically promote the recognition of the "other."

"Artificial intelligence" dimension

Most participants stated that they were aware of the presence of AI in their daily lives (question 21). This perception reflects the growing footprint of

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AI in human contexts. It should be noted that Pichardo *et al.* (2024) and Lee (2020) argue that AI is no longer just a functional tool for a specialized technical sector, but is now part of an epistemic framework that transforms social interactions and access to knowledge from multiple views.

However, widespread indecision was detected regarding technical and operational knowledge of how AI works (question 22). To this end, it is assumed that it is not easy for teachers (like many individuals in global society) to grasp the technical and functional elements of the technological nature of AI. This gap (Echavarría Arcila, 2023) reflects the distance between intuitive use and deep understanding of the fundamentals of this technology, a common phenomenon in today's society.

Regarding specific training in the use of AI (question 23), the majority stated that they had not received any training in this area. This lack of training may limit critical thinking and meaningful appropriation of AI in educational contexts (Guamán Inga *et al.*, 2023; Celik *et al.*, 2022), because the development of digital competencies, which includes both technical and reflective skills, is essential for effectively integrating this technology into teaching. The findings of the research by Cárdenas and Suárez (2024) and Harris Bonet *et al.* (2022) affirm that not receiving training in this area puts one of the key pieces of the classroom at risk, because it limits autonomy and projects an uncritical stance toward addressing the renewed social structure that converges with AI.

It is important to note that becoming literate and trained in the use of AI is not exclusively about improving technical skills in software management (through platforms, applications, and digital tools), but rather about developing a critical understanding of the social mechanics of the new horizons of digital citizenship, in order to enable individuals to question the structures of power and meaning that technologies represent, thereby dignifying human existence for the collective good.

Despite this lack of training, several groups reported feeling competent to adapt AI in both their personal and professional lives (question 24), reflecting a possible dissonance between perception and reality, where intuitive familiarity could be confused with ethical and effective mastery.

Developing digital skills in AI involves positioning oneself at a point between the human and the technological in an act of self-construction, in a world partially mediated by technology that reconstitutes human meaning and the work of teaching.

Following Cárdenas and Suárez (2024), it is understood that digital skills are key for teachers to move forward with emerging technologies and adapt to new educational contexts.

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Regarding ethical commitment, there was broad consensus that the use of AI should be a social duty (question 28). This recognition makes sense when assuming that this digital technology impacts the social aspect in different areas of everyday life and recodes the purpose of human beings. Because of this, an ethical commitment must be demanded for the use of and connection between the subject and AI, because:

> A world driven by Artificial Intelligence involves more than science, technology, engineering, and mathematics. As computers behave more like humans, the social sciences and humanities will become even more important [...]. If Artificial Intelligence is to reach its potential to serve humans, then every engineer will have to learn more about the social sciences, and every social science specialization will need to learn more about engineering (Porcelli, 2020, p. 58).

On the regulation of AI, most respondents believed that AI will enhance human activities (question 25); this view is shared by advocates of this new synthesis, who seek a critical and responsible integration of these technologies. In this sense (Shneiderman, 2022), those responsible for education will integrate interdisciplinary skills to design new learning scenarios, a vision that will expand human responsibilities and social ties.

Some participants agreed that continuous interaction with AI will project a new way of seeing the world (question 27). Younger teachers were more likely to perceive a transformation in the way of seeing the world, while older teachers were more indecisive.

Based on the latter, a dialogue can be extended with the postulates of Tolentino Sanjuan (2024), who suggests that there is a generational gap in the critical appropriation of the paradigm shifts driven by AI.

Regarding the risk that AI will drive humans apart (question 29), responses ranged from agreement to indecision. There is still no consensus in the academic literature that clarifies this perception; however, in everyday life, a threshold between the metaxial and the liminal is developing between humans and AI. Narváez (2024) recognizes that coexistence with algorithmic entities poses unprecedented challenges for social interaction.

Regarding the complexity of human interaction due to AI (question 26), the prevailing perception was that it will not necessarily become more complex, which contrasts with positions that warn of the growing delegation of human functions to automatic systems. Specifically, there are references (Wu, 2019) that defend the idea that human interaction becomes radically more complex with the presence of AI.

Following this line of thinking, teachers—and humans in general—will be able to delegate certain tasks and decision-making to artificial al-

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gorithms, which traditionally depended exclusively on human capabilities, knowledge, and subjectivity. This calls into question the preservation of the logic, dialogue, and sensitivity that humans experience with this technology.

Finally, on the possibility of harmonious coexistence between humans and AI systems (question 30), most expressed agreement, albeit with generational nuances. The specialized literature (Liu *et al.*, 2022) emphasizes the need to establish solid ethical foundations for beneficial coexistence between the subject and the object. These foundations must preserve a balance because it is importat to consider that, in a relative complementary symbiosis, each party contributes from its essence and purpose, without one reducing the other or displacing its uniqueness.

"Generic artificial intelligence" dimension

In this last dimension, teachers' perceptions of the comparability between AI and human capabilities were analyzed, also by age range.

First, it was observed that teachers tended to agree that artificial neural networks are comparable to human biological neural networks (question 31). This perception coincides with the initial intention of AI design (Pham *et al.,* 2023; Shao & Shein, 2023), which is inspired by the architecture and functionality of the human brain. However, it should be emphasized that artificial neural networks (Fjelland, 2020; Zohuri, 2023), although they replicate learning processes and follow certain patterns, are limited in comparison to human biological and experiential complexity.

Regarding the possibility that AI could perform complex tasks in social sciences as a human would (question 32), teachers expressed widespread disagreement. This result reflects a critical understanding of the current limitations of AI in areas that require deep contextual interpretation, emotionality, and ethical judgment, despite advances in multidisciplinary applications. There is also a critical stance (Cambria *et al.*, 2023; Ligo *et al.*, 2021) that emphasizes a relative gap in research and evidence addressing the impact of AI on disciplines such as sociology, anthropology, history, social psychology, etc.

Regarding AI's ability to recognize human characteristics, similarities, and differences (question 40), the results showed majority agreement, although this was tempered by indecision among some age groups. This technical recognition (Fokas, 2023; Tan *et al.*, 2021) does not imply a genuine understanding of human beings, given that AI lacks subjectivity, intuition, and cultural awareness.

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AI is currently limited to the training provided by the subject (through *prompt* engineering: commands given to an AI model to obtain relevant and appropriate responses). Narrow AI is limited by its lack of subjectivity, experience, values, emotions, and principles, which are fundamental elements of the human condition.

Teachers also agreed on AI's ability to efficiently prioritize information in order to meet human needs and requirements (question 35). In other words, although most of them were not literate in the use of AI, they have a good perception of what artificial learning models can technically develop. It is noteworthy that AI works with multilayer neural networks to organize and distribute information in complex systems. As Villegas Sánchez (2024) points out:

> Artificial neural networks are a model that takes the functioning of the nervous system as an example, allowing us to generate artificial neural networks with the ability to learn hierarchical knowledge, with applications in text, audio, and image recognition, similar to how a biological organism would do (p. 6).

However, they showed indecision regarding AI's ability to learn from error (question 34), which reveals a partial understanding of this technology's ability to learn through reinforcement and backpropagation. Steyvers and Kumar (2023) understand that these are fundamental processes in the adjustment of neural networks. Knowing how this technology improves its ability to learn through reinforcement (algorithms that learn through trial and error) goes beyond common understanding, as it inhabits a field that is highly technical and specialized.

Regarding the cognitive capacity of AI on abstract and creative tasks (question 37), indecision or disagreement prevailed, reflecting the complexity of this debate. Although AI has demonstrated capabilities to produce novel and complex content (Atkinson and Barker, 2023; Mitchell, 2023), it still differs radically from human potential because it lacks intuition, life experiences, and intrinsic motivations.

The abstraction and creativity of AI differ from human biological subjects due to the absence of experiential richness, multisensory perception, self-regulatory and internal systems (evaluation of effectiveness, importance, emotions, and motivation), and neurocognitive functions that transcend the self (through higher cognitive gears such as conceptualization, planning, and reasoning from complexity).

Broadly speaking, according to Veale *et al*. (2019), technological advances have not demonstrated that AI has cognitive versatility compa-

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rable to that of humans in interpreting and expressing the complexity of both the creative and the abstract.

There was clear disagreement on the self-motivation of AI to perform tasks or activities (question 38). This is also reflected in the scientific literature (Harvey, 2024; Ryan & Deci, 2017), which states that AI acts under human guidelines and lacks free will. Although models of limited artificial motivation are being explored (Baldassarre & Mirolli, 2013; Pessoa, 2019), there is no evidence of self-motivation comparable to that of humans.

The difference between self-motivation lies in the fact that the subject (human being) is a reflective, creative agent aware of a purpose that creates meaning and identity; from another perspective, the object (AI) is a reactive tool with capabilities governed by complex mathematical structures.

Likewise, teachers denied the possibility that AI can act ethically in an autonomous way (question 36), reaffirming that its "ethics" depend on its programming and human regulation. AI alone lacks intrinsic ethical meaning and morality; its ethical operability (which is only viable if it is programmed to do so) reflects values based on justice, equity, security, and respect, which, to a certain extent (UNESCO, 2021; Aparicio and Cortés, 2024), is regulated by national and international bodies through appropriate policies.

The rules governing the use of AI (Gallent *et al.*, 2024) must be constantly monitored to protect users under ethical guidelines and thus provide fairness and transparency. Another perspective on AI ethics lies in its use by humans, as conscious moral agents; responsibility for its management must be consistent with axiological and ethical attributes and universal principles. AI, not being a conscious entity with full intrinsic motivation, is a technology subordinate to human capacities to discern between good and evil.

They also rejected the idea that AI can experience human emotions (question 39). This rejection exposes a profound ontological difference between humans and AI. It is prudent to remember that emotions (García Andrade, 2019; Gravante, 2020) are attributed to the human condition and not to AI, as they are the result of evolutionary factors that highlight the ontological and biological difference between the two entities.

It is necessary to emphasize that feelings may be partially nonexistent in AI today, as it is confined to pre-programmed codes and algorithms; AI cannot naturally develop emotions as humans do. Paradoxically, however, AI without feelings can recognize and emulate multiple affective-emotional manifestations, thanks to its advanced models that simulate patterns of human behavior.

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Finally, they denied that AI can develop otherness as humans do (question 33). While AI can simulate complex interactions (Martínez Baigorri, 2024), it lacks the biological, social, and ethical foundations necessary for full recognition as a human "other."

There are no declarative statements that prove that AI has otherness, because, to date, technology in this field is limited to the capabilities of narrow AI (or weak AI). As mentioned earlier in this research, AI lacks subjectivity, emotions, self-motivation, empathy, principles and values, consciousness, uniqueness, and complexity in the sense of the innate and developed attributes of human. Consequently, AI is currently philosophically, socially, and humanistically incapable of recognizing the "other" as humans do, as it lacks several of the aforementioned elements.

On the other hand, AI has unique characteristics that make it "other" in its own way when performing actions such as analyzing, co-creating, addressing problems, satisfying human needs, recognizing certain emotions, interacting with other technologies, etc.

The presence of AI redefines the roles and relationships between subject and object, and it can be seen from post-human nomadism that there is the possibility of moving forward fluidly with a way of thinking that goes beyond the reductionism of traditional existentialism, so that future transformations of being "speak to us of alternative representations in which otherness, whether organic, artificial, or a mixture of both, is present" (Martínez Baigorri, 2024, p. 341).

It depends on human beings whether AI will at some point be recognized (or not) as an "other," whether humans are willing to restructure the paradigms that limit the conceptualization of human otherness (and whether the digital entity is programmed for this).

The results of this last dimension reinforce the need to deepen critical reflection on the epistemological and ontological limits of AI in relation to the human condition, in line with the challenges pointed out by recent literature.

Conclusions

This study aimed to assess, based on the paradigms and professional experience of teachers, how they recognize otherness and whether they identify its possible existence in AI, in order to explore the construction of present and future bonds between humans and this emerging technology. The findings presented underscore the importance of in-depth

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analysis to understand the ethical, social, and pedagogical implications in an increasingly digitized world.

Authors such as Aguilar-Gordón (2011) argue that technology should be understood as a means and as an end in itself. It is a means to achieve goals and objectives, and therefore, human beings must make rational use of technology to avoid objectification, instrumentalization, and even destruction.

However, when considering the evidence obtained, it is analyzed that caution should be exercised with this view, because digital technology, and AI in particular, must be approached with a critical, rational perspective that avoids dehumanization and excessive materialism.

On the one hand, the results of this research show that teachers do conceptualize, apply, and value otherness from another perspective, by revealing teachers' paradigms about the use and limits of AI in the educational process, in their daily lives, and in society in general. They do not consider AI to have otherness, because it lacks consciousness, ethical and moral issues, emotions, intrinsic motivation, etc., unless at some point in the future it is programmed to have that capacity.

In this sense, while some teachers recognize the transformative impact of AI on teaching and learning processes and its potential to reinforce social dynamics, others express uncertainty about its ethical and emotional capabilities and the possible fragmentation of the subject-subject relationship. This diversity of paradigms suggests the need to continually deepen the techno-scientific development of AI; teacher training on the ethical, technical, social, and pedagogical use of this technology; and conceptions of AI regarding a possible non-biological existentialism.

For these reasons, it is believed that otherness may continue to develop in the future, but that it will not necessarily be seen as it is known today. This possible scenario could unfold in parallel with the development of general AI (which will theoretically equal human intelligence) and the multifaceted surpassing of human capabilities through "super AI." Specifically, Uyar (2024) indicates that the unmatched capabilities of AI could lead people to attribute "supreme infallibility" to it, resulting in a cognitive and humanistic bias toward unthinking acceptance of its decisions. There are risks of confusing technological advancement with totalitarian superiority, as such dynamics could undermine the human entity. It is worth emphasizing that the potential otherness of AI is subject to technological advances and humans' willingness to recode the term otherness.

Therefore, it is not just a matter of personifying technology, but of recognizing its ability to interact and participate in human processes in a

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meaningful way. However, challenges remain related to professional training and the full recognition of otherness in complex social and cultural contexts, highlighting the need for greater awareness and training in the use of AI, aspects that remain urgent priorities in international educational and public policies.

A future framework for education is also proposed, in which AI not only assists but also continuously interacts collaboratively with teachers, enabling more personalized and inclusive approaches. This requires a careful balance between technological development and the preservation of fundamental human values to ensure that AI is a tool that amplifies teachers' ability to recognize and value diversity in all its forms.

Among the limitations of the study, the focus on a specific sample of higher education teachers in Mexico City stands out, which restricts the generalization of the results. In addition, although the quantitative design allowed to capture relevant trends, it would be advisable to incorporate more in-depth qualitative methodologies, such as interviews or focus groups, to explore the richness of subjective interpretations around otherness and AI.

In future research, it would be valuable to expand the sample to teachers from other sociocultural contexts and educational levels, as well as to integrate the voice of students as co-protagonists in their daily encounter with intelligent technologies. It would also be relevant to investigate the practical impact of AI tools specifically designed to promote educational diversity and inclusion.

Finally, the study invites us to critically rethink the role of AI in education and society; it provides a basis for exploring pedagogical and social strategies with a human touch that foster a more conscious relationship between humans and technologies. It is imperative to develop training programs that integrate digital skills with ethical and humanistic approaches to ensure that AI strengthens (rather than replaces) teachers' ability to build inclusive communities in an interconnected and constantly changing world.

Note

1 The journal's guidelines state that documents with a maximum of three authors are accepted. However, as this is an interesting, complex, and extensive article that has received outstanding evaluations from international reviewers and has been written by researchers from different countries and continents, the Editorial Board considers it a special case and has decided to make an exception for its publication (Sophia Journal: Collection of Philosophy of Education. Publication guidelines, section 2, identification details).

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Declaration of Authorship - CRediT Taxonomy	
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Declaration on the use of artificial intelligence
Ricardo Alberto Reza Flores, Rosa Maria Vicari, Cristiano Galafassi, and Mireia Usart Rodríguez, **DECLARE** that the article entitled "Teachers' perceptions of otherness in the age of artificial intelligence" was not supported by artificial intelligence (AI).

Date of receipt: December 7, 2024
Review date: February 20, 2025
Approval date: April 25, 2025
Publication date: July 15, 2025

Sophia 39: 2025.

Print ISSN:1390-3861 / Electronic ISSN: 1390-8626, pp. 269-299.