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Antiracist mathematics education in a hermeneutic perspective: dialogues between epistemologies of the South and epistemic justice

ARTICLE

Raimundo Santos de Castro[i]

Instituto Federal de Educação, Ciência e Tecnologia do Maranhão, Maranhão, Maranhão, Brasil

Abstract

The article proposes a hermeneutic approach to antiracist mathematics education, articulating epistemologies of the South, ethnomathematics, critical pedagogy, and epistemic justice. From an interpretive philosophical perspective, it analyzes the Eurocentric foundations of traditional mathematics teaching and proposes a reconfiguration of both curriculum and teaching practice. It employs qualitative and hermeneutic methodology to understand mathematics as a cultural and situated language, connected to the lived experience of racialized subjects. The findings show that pedagogical listening, valuing ancestral knowledge, and deconstructing mathematical neutrality are paths toward a more plural, ethical, and emancipatory educational practice. The study concludes that antiracist mathematics education is a collective, ethical, and political project that aims to build epistemic justice, racial equity, and the appreciation of diversity.

Keywords: Mathematics Education. Antiracism. Hermeneutics. Epistemologies of the South. Epistemic Justice.

Educação matemática antirracista em perspectiva hermenêutica: diálogos entre epistemologias do Sul e justiça epistêmica

Resumo

O artigo propõe uma abordagem hermenêutica da educação matemática antirracista, articulando epistemologias do Sul, etnomatemática, pedagogia crítica e justiça epistêmica. A partir de uma perspectiva filosófica interpretativa, analisa os fundamentos eurocentrados do ensino tradicional da matemática e propõe uma reconfiguração do currículo e da prática docente. Utiliza metodologia qualitativa e hermenêutica para compreender a matemática como linguagem cultural e situada, conectada à experiência de sujeitos racializados. Os achados evidenciam que a escuta pedagógica, a valorização dos saberes ancestrais e a desconstrução da neutralidade matemática são caminhos para uma prática educativa mais plural, ética e emancipadora. O estudo conclui que a educação matemática antirracista é um projeto coletivo, ético e político que visa construir justiça epistêmica, equidade racial e valorização da diversidade.

Palavras-chave: Educação Matemática. Antirracismo. Hermenêutica. Epistemologias do Sul. Justiça Epistêmica.

1 Introduction

The demands for social and racial justice inevitably traverse the contemporary world, also reaching the educational field. In this scenario, mathematics, historically conceived as a neutral, universal, and technical territory, is called upon to revisit its foundations, curricula, and pedagogical practices from the perspective of an anti-racist lens. This article seeks to understand how mathematics education can contribute to the deconstruction of racist epistemologies still prevalent in schools and in teacher education, proposing a hermeneutic framework that favors the dialogue between plural knowledge.

We start from the premise that school mathematics, especially in Brazil, has been supported by Eurocentric and exclusionary paradigms, which disregard or render invisible epistemologies originating from African, Afro-Brazilian, Indigenous peoples, and other historically silenced subjects. Overcoming this situation requires re-signifying mathematics as a cultural, situated, and living language, capable of embracing diverse knowledge and operating as a tool for emancipation, rather than an instrument of exclusion.

The intersection between mathematics education and anti-racist education is, therefore, urgent and fruitful. While the former has been repeatedly associated with supposed logical neutrality and technical rigidity, the latter has consolidated itself as a political struggle for recognition and equity. In contemporary times, both can be understood as symbiotic fields, whose articulation contributes to the constitution of an ethical, emancipatory, and intercultural pedagogical project. This research thus emerges from the necessity for a deeper pedagogical listening to the meanings of mathematics within the context of ethnic-racial relations, proposing a hermeneutic approach that privileges dialogue with dissident and insurgent knowledge.

The starting point of this investigation is the realization that the supposed universality of Western mathematics functioned, over the centuries, as a mechanism of silencing and delegitimization of numerical, geometric, and astronomical practices of non-European civilizations. Such a colonial heritage forged monocultural and decontextualized

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curricula, which reinforce epistemic and racial inequalities. Given this, the question guiding the present study is: how can philosophical hermeneutics contribute to the construction of an anti-racist, dialogic, and pluriepistemic proposal for mathematics education?

To answer the proposed question, we establish as a general objective to analyze how philosophical hermeneutics can offer theoretical foundations for the construction of an anti-racist mathematics education proposal, guided by the recognition of epistemic diversity. More specifically, we aim to examine the contributions of hermeneutics, particularly in Gadamer (2000), to understand pedagogical practice as an exercise of dialogue and listening; to articulate this framework with critical pedagogies, Epistemologies of the South, and ethnomathematics, emphasizing its relevance in confronting racism and valuing cultural plurality; and to identify the contributions and challenges of a pluriepistemic mathematics curriculum, capable of resisting epistemicide (Santos, 2009) and promoting epistemic justice (Fricker, 2007).

The relevance of the study is justified by the ethical and political imperative to confront the coloniality of knowledge (Quijano, 2005) and the persistent effects of structural racism on educational practices. The school, as a space for the production and circulation of knowledge, cannot evade the task of re-signifying mathematics as an instrument for critical reading of the world, for valuing original and Afro-diasporic cultures, and for resistance against hegemonic narratives of exclusion.

From a theoretical-methodological perspective, this work adopts an interdisciplinary and decolonial perspective, articulating philosophical hermeneutics with critical pedagogy (Freire, 1996; 2020), ethnomathematics (D'Ambrosio, 2005), and Epistemologies of the South (Santos, 2009; Walsh, 2009). The theoretical *corpus* is constituted by authors who offer keys for thinking about critical and anti-racist mathematics education, such as Gadamer (2000), Ricoeur (1997), Fricker (2007), Skovsmose (2001), and Rosa and Orey (2016). Each of these voices was interpreted in light of the fusion of horizons proposed by hermeneutics, in order to establish connections between philosophy, pedagogical practice, and the confrontation of racial inequalities.

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The present article does not intend to present a normative teaching model, but to propose an interpretive opening: an invitation to critical dialogue about the meanings and uses of mathematics in the formation of historical subjects. In this perspective, we understand that all educational practice is situated, laden with pre-understandings, and traversed by power disputes. The construction of an anti-racist mathematics education implies, therefore, not only inserting content about Africa or Indigenous cultures, but ontologically reconfiguring the pedagogical practice itself, recognizing the other as a full epistemic subject, bearer of knowledge, histories, and cosmovisions.

This article is organized as follows: the next section presents the theoretical framework that grounds the proposal, articulating hermeneutics, critical pedagogy, ethnomathematics, and decoloniality; subsequently, the methodology is described, highlighting hermeneutic reading as a practice of analysis; afterward, the interpretive findings are discussed, highlighting the contributions and challenges of an anti-racist mathematics; finally, the final considerations revisit the main arguments and point out pathways for the consolidation of a more just, plural, and emancipatory educational practice.

2 Methodology

The present study is situated in the field of qualitative research, assuming philosophical hermeneutics as its foundational horizon. This methodological and epistemological choice is anchored in an interpretive paradigm that understands knowledge not merely as a neutral representation of reality, but as a historical, cultural, and situated construction, always permeated by language, traditions, and values. Hermeneutics, in this sense, is not only a method here, but also an ontological and ethical option: to recognize that every act of understanding implies an involvement with alterity and that language constitutes the original place where meanings emerge and transform. As Gadamer (2000, p. 506) affirms, "being that can be understood is language," and it is precisely in this horizon of language that the possibility of transformative pedagogical

dialogue, essential to a mathematics education proposal committed to justice and inclusion, is rooted.

Gadamer's philosophical hermeneutics (2000), especially through the concept of "fusion of horizons" (*Horizontverschmelzung*), constitutes the theoretical core of this investigation. Understanding, in this framework, is not reduced to the submission of one horizon to another, but occurs in the constitution of a third space of meaning, which results from the interweaving of the historical horizons of the interpreter and the text. Applied to the field of mathematics education, this conception allows the pedagogical act to be conceived as an event of alterity in which historically hegemonic knowledge dialogue—and, often, come into tension—with marginalized and silenced epistemologies, such as those originating from African, Afro-Brazilian, Indigenous, and popular cultures. What is sought, therefore, is to establish a reading of the world and of mathematics itself that takes into account the experiences of historically racialized and excluded subjects, reconfiguring pedagogical listening as a practice of epistemic justice (Santos, 2009).

Methodologically, this work is configured as a bibliographic-analytical research, conceived not merely in a technical way, but as an exercise of critical and dialogic interpretation. The theoretical *corpus* was constituted from reference works in philosophical hermeneutics (Gadamer, 2000; Ricoeur, 1997), critical pedagogy (Freire, 1996; 2020), ethnomathematics (D'Ambrosio, 2005; Rosa; Orey, 2016), Epistemologies of the South (Santos, 2009; Walsh, 2009), and the theory of epistemic justice (Fricker, 2007). The selection of these texts obeyed two central criteria: theoretical relevance to support the hermeneutic approach and direct relevance to the debate on anti-racist mathematics education. Such works were taken not as repositories of absolute truths, but as voices in interlocution, in the manner suggested by Ricoeur (1997), for whom the text functions as a mediation between the said and the unsaid, between the intended meaning and the possible meaning, between the authorial intention and the world of the reader.

The analytical path followed interpretive movements that, although not rigid, proved fundamental for the construction of meanings: initially, an exploratory reading of the *corpus*

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texts was performed, with a view to identifying key concepts related to hermeneutics, mathematics education, and anti-racism; subsequently, hermeneutic categories of analysis were constructed—such as alterity, fusion of horizons, epistemicide, and epistemic justice—which served as lenses to articulate the texts with each other; finally, a critical synthesis was carried out, in which these categories were mobilized to understand how mathematics can be re-signified as a language of intercultural dialogue and resistance. This interpretive process assumed the hermeneutic circle as a constitutive principle, that is, the awareness that no reading starts from a zero point of neutrality, but always from pre-understandings that can be transformed in the encounter with the text and with alterity (Porter; Robinson, 2011).

The rigor criteria adopted in this investigation distance themselves from those linked to the positivist paradigm, such as validity and generalization, prioritizing parameters specific to qualitative research: credibility, internal consistency, and transferability (Lincoln; Guba, 1985). Credibility was sought through coherence between the theoretical foundation, the objectives, and the analysis carried out; internal consistency was guaranteed by the clarity of the argumentation and the explication of the presuppositions guiding the reading; and transferability is manifested in the possibility that the reflections developed here may inspire and dialogue with distinct educational contexts, expanding the interpretive power of the proposal.

Furthermore, the investigation adopted a stance of critical hermeneutics, which is not restricted to the recognition of alterity, but problematizes the power dynamics and speech asymmetries that structure social and educational relations. We engage here with Habermas (1987), who proposes the necessity for hermeneutics to open up to ideological critique, recognizing the limits that systemic structures impose on mutual understanding. This perspective, approaching what Porter and Robinson (2011) call "critical hermeneutics of praxis," allowed for the articulation of listening and denunciation, comprehension and transformation, revealing school mathematics not only as a technical and formal language, but also as a symbolic field traversed by political and epistemological disputes.

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It is recognized, however, that the present research has limitations. By configuring itself as a bibliographic and analytical study, it does not directly encompass empirical experiences in the classroom or students' learning processes in specific contexts. Nevertheless, this limitation does not invalidate its contribution, which is situated on the theoretical and reflective plane, offering bases for the formulation of future pedagogical practices and for the construction of empirical investigations that will continue the dialogue established here.

In summary, the adopted methodology is committed not to the confirmation of hypotheses, but to the emergence of meanings, to the possibility of hearing silences, interpreting absences, and re-signifying experiences. Instead of seeking an impossible neutrality, the study explicitly states its ethical and political positions: it relies on a pedagogy of insurgency, which recognizes education as a political act and mathematics as a language traversed by symbolic and material disputes. Hermeneutics is conceived here as a practice of listening, openness, and dialogue, but also as a gesture of transformation: interpreting, in this horizon, is also reinventing the meanings of mathematics and reinscribing it as a language of justice, inclusion, and freedom.

3 Results and discussion: interpretive findings, contributions, and challenges of conceptualizing an anti-racist mathematics

This section presents the main interpretive findings arising from the hermeneutic analysis of the theoretical *corpus* and the epistemic articulations carried out throughout the research, as well as elucidates the contributions and challenges of establishing an anti-racist mathematics education proposal, in light of an interpretive philosophical paradigm. In line with Gadamer's foundations (2000), it is understood that the findings are not "results" in the positivist sense, but emergent meanings from the dialogue between the interpreter and the texts, between the world of the researcher and the worlds projected by the analyzed theories and practices.

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The construction of an anti-racist mathematics education requires more than the denunciation of the historical exclusions that permeate mathematics teaching. It demands a radical reconfiguration of the epistemic gaze upon mathematical knowledge, its subjects, and its ways of teaching and learning. This hermeneutic repositioning implies, as Gadamer (2000) points out, overcoming the claim of neutrality and opening up to dialogue between horizons: between the Western scientific tradition and the knowledge produced by historically silenced bodies.

In the field of philosophical hermeneutics, understanding is not the simple reproduction of what the other has said, but a movement of the fusion of horizons (*Horizontverschmelzung*) between the interpreter and the world of the text or tradition (Gadamer, 2000). When applied to pedagogical practice, this approach transforms the pedagogical act into an exercise of radical listening and ontological recognition. Teaching mathematics, in this context, is not merely transmitting techniques, but listening to the ancestral, communal, and subjective narratives that express other mathematical rationalities—such as those expressed in counting, measuring, and geometric practices of African, Afro-Brazilian, and Indigenous peoples (D'Ambrosio, 2005).

In this sense, the anti-racist proposal demands the displacement of Eurocentric epistemic centrality. Santos (2009) calls this a fight against "epistemicide," which is the systematic elimination of knowledge forms not aligned with Western paradigms. Mathematics, by being taught as a universal, abstract, and decontextualized language, becomes a technology of power that conceals its cultural and ideological marks. A critical hermeneutics, however, invites us to understand mathematics as a situated language, rooted in specific cultures and practices.

Contemporary hermeneutics deepens this conception by highlighting the role of narrative as the structure of identity. Self-understanding, in this framework, occurs through the symbolic appropriation of shared histories and cultural discourses that either legitimize or annul the subject's place (Ricoeur, 1997). Applied to the classroom, this implies understanding that Black and Indigenous students, when they do not see themselves

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represented in the examples, authors, or contexts of mathematical application, are excluded from processes of identification and belonging. As Fricker (2007) emphasizes, this process constitutes an epistemic injustice, that is, a form of denying credibility or cognitive competence based on social prejudice.

In response to this injustice, anti-racist mathematics education emerges as a horizon of transformation. Araújo, Ferreira, and Vieira (2023) propose that this approach needs to be anchored in pedagogical practices that affirm Afro-Brazilian and Indigenous cultures as bearers of legitimate mathematical epistemologies. In this sense, ethnomathematics, proposed by D'Ambrosio (2005), is thus understood here as a political field, not just a cultural one. It is an epistemic insurgency that destabilizes the hierarchy between the mathematical "universal" and the "particular" community knowledge.

By recognizing mathematical knowledge as a cultural and historical construction, the conception of the curriculum is also broadened. The curriculum, which traditionally operates as a mechanism for the selection and standardization of knowledge (Apple, 1993), comes to be understood, through the hermeneutic lens, as a text in dispute. It is produced at the confluence of interests, values, and worldviews, and can—and must—be reinterpreted. Curricular hermeneutics, in this sense, is not limited to content analysis, but investigates the conditions of possibility for the emergence of other meanings, other voices, and other mathematical narratives.

Critical interculturality, as developed by Walsh (2009), offers a decisive contribution to this debate. Unlike mere multicultural tolerance, critical interculturality proposes a restructuring of the educational space based on the relationship between different systems of knowledge. In the context of mathematics, this means opening formal education to an ecology of knowledges that includes everything from symmetry patterns in Indigenous basketry to the use of number systems in traditional African games, such as *awelé* (Jesus; Pereira, 2024).

Furthermore, it is necessary to incorporate the notions of pedagogical agency and anti-racist teacher education. For Oliveira, Pires, and Almeida (2022), continuing education

processes need to include ethical and political dimensions that prepare educators to recognize and intervene in the racialized structures that permeate mathematical practices. It is not enough to include African content in the curriculum; it is necessary to decolonize the very foundations of what is understood as "teaching" and " learning" mathematics.

This decolonization, in turn, is linked to overcoming an instrumental view of mathematics. For Lockhart (2002), mathematical teaching frequently dehumanizes the aesthetic and creative experience that characterizes authentic mathematical thought. Anti-racist mathematics education, in this framework, proposes not only a new ethics but a new "poetics" of teaching. It seeks to recover the wonder, playfulness, and the link between number and culture, between calculation and body, between form and territory.

The hermeneutic dimension thus lies in the capacity to interpret and reinterpret mathematical signs in light of the lived experiences of racialized subjects. It is a pedagogy of recognition (Honneth, 2003), which recognizes in the other not only difference but the power of enunciation, creation, and reinvention of knowledge. Thus, Freire (1996) teaches us that educating is an act of love—but also of critical courage, of epistemological disobedience, and of ethical reconstruction.

Em suma, esta proposta hermenêutica para a Educação Matemática Antirracista se ancora em cinco pilares interdependentes:

In summary, this hermeneutic proposal for anti-racist mathematics education is anchored in five interdependent pillars:

1. Fusion of horizons as an interpretive openness to the knowledges and cultures of the other (Gadamer, 2000);
2. Epistemic narrativity as a mode of constitution of the pedagogical subject (Ricoeur, 1997);
3. Epistemic justice as an ethical reparation of cognitive and educational inequalities (Fricker, 2007);
4. Critical interculturality as a horizon for dialogue and epistemic confrontation (Walsh, 2009);

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5. Curricular decolonization as a symbolic reconstruction of mathematics in its historical and cultural plurality (D'Ambrosio, 2005).

With this framework, pedagogical practice is transformed into a philosophical and political exercise of re-enchanting knowledge. Anti-racist mathematics education, in this context, is not merely an educational project: it is an ontology of care, an ethics of listening, and an aesthetics of presence.

Mathematics, as a school discipline, consolidated itself in Brazil under the aegis of a Eurocentric rationality, whose universalizing epistemology disregards the knowledges of African, Indigenous, and other racialized peoples. This colonial legacy forged a conception of mathematics as neutral, abstract knowledge, detached from the historical experiences of the subjects. Such apparent neutrality masks the political and cultural dimension of mathematics as a technology of power, as discussed by Foucault (2008) and revisited in the field of critical mathematics education by authors such as Skovsmose (2001).

The critique of Eurocentrism in school mathematics is central to an anti-racist proposal, as it allows for the unveiling of the mechanisms of exclusion and invisibilization of non-European contributions to the development of this field of knowledge. The legacy of colonialism occurs not only in the imposition of content and methods, but also in how the Black or Indigenous subject is positioned in the curriculum: as absent, as the other, as peripheral to legitimate knowledge. The mathematics curriculum thus reproduces a logic of epistemic silencing and ontological denial that urgently needs to be confronted (Santos, 2009).

Thinking about an anti-racist mathematics education therefore requires the recognition of the situated and historical nature of mathematical knowledges. It implies denaturalizing school mathematics as the only truth and opening space for other epistemologies, such as those originating from African ancestry, Amerindian cosmologies, and the daily practices of peripheral communities. This epistemic openness is a condition for mathematics teaching to become an instrument of emancipation rather than oppression.

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Hermeneutics, understood as the art of interpretation and listening, offers a powerful key for anti-racist mathematics education. Inspired by Gadamer (2000), Larrosa (2003), and Ricoeur (1997), we propose to understand mathematics not only as content, but as a language permeated by histories, meanings, and memories. Educational hermeneutics allows for the encounter with the other as a subject, and not as an object of learning. It proposes a pedagogy of listening, which values the narratives of Black, Indigenous, and peripheral students, recognizing them as bearers of valid mathematical meanings.

In this interpretive horizon, the pedagogical act ceases to be a unidirectional process of transmission and becomes an event of alterity. Teaching mathematics is listening to the student's lived world, their experience, their fears and achievements with numbers and shapes (Freire, 1996). It is reconfiguring the pedagogical relationship as a space for reconstructing epistemic belonging, offering racialized subjects the possibility of seeing themselves as legitimate producers and bearers of knowledge. It is about replacing the "master's voice" with sensitive listening, with listening that recognizes and interprets the multiple horizons of understanding at play in the classroom (Porter; Robinson, 2011).

From the hermeneutic perspective, mathematical language is not just a logical tool, but a means of signifying the world. Its symbolic formality can open up to the poetic, the political, and the cultural. Based on this conception, mathematics can be re-signified as a narrative, as a symbolic construction that expresses, conceals, or reveals worlds. This demands a listening that goes beyond correctness and error, seeking meaning in the students' trajectories and in the ways they appropriate mathematical language.

Critical interculturality, proposed by Walsh (2009), is articulated with mathematics education as a possibility for dialogue between knowledges without colonial hierarchies. It calls upon the school to be a space for intercultural encounters, where traditional and scientific knowledges interpenetrate without nullifying diversity. From the critical perspective of interculturality, the objective is not the simple inclusion of Afro or Indigenous content in the curriculum in a punctual and illustrative manner, but the deconstruction of the colonial knowledge matrix that sustains the hegemonic forms of teaching mathematics.

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Mathematics, in this context, is not an instrument of standardization, but a living and plural language (D'Ambrosio, 2005). Critical intercultural pedagogy allows for the building of bridges between the algorithms of school mathematics and the counting methods of Indigenous peoples; between the symmetries of Euclidean geometry and the African *grafismos* present in Black art and aesthetics. More than just content, mathematics becomes a political gesture of valuing diverse worlds. As Skovsmose (2001) proposes, critical mathematics education must be guided by an ethical and political concern, aimed at the construction of social justice.

This approach demands a stance of ontological and epistemic openness from the educator. It means recognizing that school mathematics, as we know it, is only one of many possibilities and that other forms of world intelligibility also deserve to be taught, valued, and legitimized. This implies breaking with the logic of assimilation and adopting pedagogical practices that respect the rhythm, language, symbols, and values of different cultural groups.

Critical interculturality also invites us to rethink didactic materials, the examples used, the visual representations, and the contexts of mathematical application. An anti-racist mathematics education must question, for example, why almost all textbook problems involve white names, urban situations from the South/Southeast [of Brazil], or consumer contexts, thereby rendering invisible other ways of life and knowledge. Hermeneutics, here, acts as an interpretive methodology to reveal exclusions and enable more plural reconstructions (Gadamer, 2000).

The first and most significant interpretive finding refers to the deconstruction of the idea that mathematics is a universal, neutral, and culturally immaculate language. The analysis of the texts by D'Ambrosio (2005), Freire (1996), Ricoeur (1997), and Santos (2009) reveals that this supposed neutrality is, in fact, a strategy for concealing its historical origin and its role as a power device. The universality attributed to mathematics is a Eurocentric construct that naturalizes "epistemicides" (Santos, 2009) and denies the

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legitimacy of other systems of logical, spatial, and algorithmic thinking present in African, Amerindian, Asian, and Afro-diasporic cultures.

Another relevant finding is the recognition of mathematics as a symbolic language with narrative and aesthetic power. Hermeneutic reading allows us to understand that mathematics also speaks of the world, but it does so through a specific grammar—numbers, proportions, shapes, regularities—that can be taught both as a tool for control and as an instrument of emancipation. When appropriated by racialized subjects and reconfigured into meaningful pedagogical practices, mathematics ceases to be a "closed code" and becomes a "living language," connected to the territory, ancestry, daily life, and the struggle for recognition.

Finally, the findings point to the importance of pedagogical listening as an interpretive and political act. Based on Gadamer (2000) and Ricoeur (1997), it is understood that the teacher is not a mere transmitter of knowledge, but a mediator of meanings, a hermeneutic agent capable of establishing spaces for the fusion of horizons between the epistemologies of tradition and the insurgent knowledge of the students. The teaching of mathematics is not limited to solving equations, but includes the critical interpretation of reality and the valuing of non-normalized cognitive experiences.

4 Contributions of the hermeneutic anti-racist mathematics proposal

The contributions of this proposal unfold in at least four dimensions: epistemic, pedagogical, ontological, and political.

In the epistemic dimension, the main contribution is the widening of the horizons of mathematical knowledge. By recognizing the existence of other mathematical rationalities—such as the ethnomathematics present in ancestral African and Indigenous practices—mathematics teaching breaks with its monocultural matrix and reconfigures itself as a field of epistemic diversity. For D'Ambrosio (2005), ethnomathematics allows us to understand that every people has, in its own way, developed forms of quantifying,

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measuring, ordering, and calculating, and that these knowledges must be recognized as legitimate and fruitful.

In the pedagogical dimension, the contribution lies in the reconfiguration of the teacher's role and the re-signification of the curriculum. The educator ceases to be merely a technician and becomes a public intellectual, responsible for promoting sensitive and critical listening to students' experiences. The curriculum, in turn, becomes a territory of dispute and creation, where historically marginalized knowledges can be (re)inscribed. The teaching of geometry, for example, can dialogue with the symmetrical patterns of African textiles; algebra can emerge from accounting in popular markets; statistics can be used to denounce racial inequalities in socioeconomic data..

In the ontological dimension, the contribution resides in the valorization of racialized subjects as bearers of mathematical rationality and creativity. Hermeneutic anti-racist mathematics education recognizes that the denial of the mathematical intelligence of Black, Indigenous, and poor students is not only pedagogical but existential. By breaking with this exclusionary logic, teaching practice begins to affirm the epistemic dignity of these subjects and cultivate their intellectual self-confidence.

In the political dimension, the proposal contributes to the construction of a democratic and plural school. Mathematics, instead of being an instrument of triage and segregation, becomes a language of denunciation and proposition. Pedagogical projects based on social investigations, the use of real data on inequality, critical analysis of racist algorithms, and the valorization of communal mathematical orality are examples of practices that transform mathematics into a tool for social justice.

The constitution of an anti-racist mathematics education faces multiple challenges, ranging from the epistemological structures that sustain the curriculum to the initial and continuing education of teachers.

The first challenge is epistemic in nature: it is the resistance of educational institutions to the decolonization of mathematical knowledge. There is a hegemonic tendency that associates excellence with abstract rigor, symbolic formalization, and

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Eurocentric normativity. Any proposal that dialogues with daily life, culture, or non-Western traditions tends to be devalued as "unscientific" or "less rigorous." This epistemic prejudice is one of the pillars of academic racism and must be seriously confronted.

The second challenge refers to teacher education. Most mathematics licentiate programs train teachers with a strong technical emphasis and low philosophical, political, or socio-cultural density. Few are prepared to deal with the ethnic-racial diversity of their students, or to build bridges between formal mathematics and community knowledges. In this scenario, it is urgent to invest in continuing education programs that include themes such as structural racism, decolonial pedagogy, ethnomathematics, critical hermeneutics, and Black epistemologies.

The third challenge is of a curricular and institutional nature. Educational public policies, often guided by standardized external assessments, pressure schools to meet quantitative targets that rarely align with the students' reality. The mathematics taught is aimed at answering exams, not at addressing contexts. Thus, pedagogical innovations that seek to pluralize teaching are seen as "a waste of time" or "a deviation from the content." Overcoming this logic requires a profound change in how basic education is evaluated, regulated, and financed.

The fourth challenge is confronting institutional racism and mathematical ableism. Even today, Black students are more prone to being seen as "weak" in mathematics, receiving less attention, and having their difficulties naturalized as a "lack of talent." This veiled racism reinforces structural inequalities and generates lasting psychological impacts. Combating this situation requires not only more equitable pedagogical practices but also policies of active inclusion, teacher representation, affective support, and the construction of an anti-racist school ethos.

Finally, there is the hermeneutic challenge: how to listen to the other in a non-colonizing way? How to avoid reducing Afro-diasporic or Indigenous knowledges to decorative "curiosities," but instead recognize their epistemic density? How to prevent interculturality from becoming empty rhetoric, without structural consequences? These are

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dilemmas that permeate any proposal that genuinely seeks to be committed to epistemic justice.

Throughout this study, it was possible to understand that anti-racist mathematics education, when illuminated by philosophical hermeneutics, acquires an ethical, aesthetic, and political density capable of reinventing the meanings of teaching and learning. The interpretive findings point to the potential of an embodied, situated, plural mathematics, and reveal that the challenge is not only epistemological but ontological: it is about transforming the place of mathematics in school and society, and with it, transforming the place of the subjects who experience it daily.

It is not, therefore, about replacing content, but about reconfiguring meanings; not about erasing formal mathematics, but about inserting it into a broader symbolic field, where all voices can be heard and all logics can dialogue. Hermeneutics, as the art of understanding the other and being transformed by that encounter, is the ethical path *par excellence* for this journey.

5 Final Considerations

The elaboration of an anti-racist mathematics education proposal, under a hermeneutic perspective, has constituted an epistemological, ethical, and ontological journey throughout this study. More than proposing a reformulation of content or methods, this work was dedicated to questioning the foundations upon which the teaching of mathematics has historically been built, especially in the Brazilian context. Based on this problematization, it was possible to understand that the traditional curriculum, rooted in a modern and Eurocentric rationality, consolidated pedagogical practices that ignore or deny the epistemic contributions of Black, Indigenous, and peripheral subjects.

The starting point was the recognition that the teaching of mathematics, as structured in schools, reflects a logic of exclusion, sustained by a universalist and decontextualized conception of mathematics. The discipline has historically been

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presented as a neutral, abstract language dissociated from the concrete experiences of students. This apparent neutrality, however, conceals symbolic violence: it perpetuates the invisibilization of other forms of knowledge, other forms of rationality, and other ways of living and understanding the world. By failing to recognize these cognitive diversities, mathematics teaching contributes to the maintenance of racial, social, and epistemic inequalities.

The proposal for an anti-racist mathematics is not limited, therefore, to the insertion of themes or content that refer to Afro-Brazilian or Indigenous culture. It proposes a structural change that requires the reconstruction of the theoretical, curricular, and methodological frameworks that sustain the teaching-learning process. Such a reconstruction involves recognizing the political role of mathematics education: it not only transmits technical knowledge but also participates in the formation of subjectivities, the validation of identities, and the production of belonging or exclusion of subjects in the school environment.

Throughout the research, it was possible to identify that a hermeneutic approach contributes significantly to this reconstruction process. Hermeneutics, as a philosophy of interpretation, offers tools to understand the educational act as an encounter between distinct horizons—the teacher's horizon and the student's horizon—where meanings are constructed and knowledges are re-signified. In this perspective, mathematics teaching transforms from a linear and transmissive process into a dialogic experience, where content is mobilized based on the histories, lived experiences, and cultural contexts of the learners.

This shift demands a new ethical and political positioning from the educator, who comes to assume the role of cultural mediator and sensitive listener to students' experiences. Listening, here, is not limited to an affective or relational disposition but is configured as a pedagogical and epistemic act. Listening to students, especially those from racialized and socially marginalized groups, means recognizing their forms of knowledge

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as legitimate and meaningful, opening space for their voices to transform the learning environment.

In this way, the mathematics curriculum ceases to be a fixed and universal structure and comes to be understood as a territory in dispute, where different rationalities can be welcomed and articulated. This curriculum in transit allows, for example, for mathematical practices developed in popular contexts, such as the use of non-conventional measurements in open markets or the logic of task division in *quilombola* communities, to be taken as starting points for the development of formal competencies. Mathematics, in this process, does not lose its logical consistency but gains cultural density and emancipatory power.

One of the central contributions of this study was, therefore, to clarify that anti-racist mathematics education is, simultaneously, a practice of resistance and a policy of re-enchantment of knowledge. Resistance, because it breaks with the homogenizing logic of the modern school, which excludes subalternized knowledges and imposes a single rationality as a criterion of validity. Re-enchantment, because it restores the ethical, aesthetic, and poetic dimension to the process of teaching and learning, connecting mathematical abstraction to the rhythms, bodies, colors, and voices of historically silenced worlds.

This dual movement—of resistance and re-enchantment—imposes significant challenges to teaching practice and the school structure. One of the main obstacles identified was the persistent fragmentation of knowledges in school curricula, which prevents dialogue between mathematics and other areas of knowledge, especially those aimed at critical formation and the valuing of diversity. Overcoming this obstacle demands integrative pedagogical practices, capable of connecting mathematics to the socio-cultural dimensions of human experience and the daily lives of students.

Another challenge concerns teacher education. Formative models still prevail in licentiate programs that prioritize technical content and disregard the social, racial, and cultural issues that traverse the school routine. Training educators capable of working with

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anti-racist mathematics requires the creation of formative spaces that articulate academic knowledges and community experiences, promoting an expanded understanding of the educator's social role and the purposes of mathematics education.

Furthermore, there is the challenge of assessment. Traditional forms of mathematics assessment are based on standardized criteria, centered on memorization of formulas and the application of decontextualized algorithms. These forms do not contemplate the plural ways of learning and expressing mathematical knowledge. Building assessments that consider the diversity of cognitive paths, languages, and rhythms is a fundamental condition for the anti-racist proposal to materialize in effective practices of inclusion and valorization of students.

Even in the face of these challenges, the study demonstrated that it is possible to construct a mathematics that dialogues with the territories, with the bodies, and with the memories of the students. A mathematics that expresses itself not only in numbers, but in gestures, dances, *grafismos*, and narratives. A mathematics that makes sense to those who learn it and that is an instrument of transformation for those who teach it. This is, without a doubt, a utopian horizon, but it is precisely the horizon that gives meaning to pedagogical action committed to justice.

At the end of this investigative journey, the conviction is reaffirmed that an anti-racist mathematics education is a necessary project, not only to repair historical injustices but to found a new ethics of teaching and learning. This ethic is based on reciprocity, respect for difference, and the affirmation of plurality as a value. To see the other—their knowledge, their history, their culture—not as a threat to order, but as an expansion of the world, is a condition for a democratic school and a more just society.

Thus, this article concludes not with a definitive conclusion, but with an invitation to the continuity of dialogue, listening, and transformation. May educators, trainers, researchers, and students continue to mobilize their knowledges and practices so that mathematics, more than a tool for selection, becomes a language of liberation. May the number bow to the rhythm of life and may the symbol open up to the meaning of the

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common. For teaching mathematics, when committed to justice, is also teaching to inhabit the world with more wholeness, beauty, and dignity.

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[i] **Raimundo Santos de Castro,** ORCID: https://orcid.org/0000-0001-6762-836X
Instituto Federal de Educação, Ciência e Tecnologia do Maranhão
Professor Titular do Departamento de Matemática no Instituto Federal de Educação, Ciência e Tecnologia do Maranhão, *Campus* São Luís – Monte Castelo. Doutor em Educação pela Universidade Federal de São Carlos (UFSCar).
Contribuição de autoria: escreveu todo o texto.
Lattes: http://lattes.cnpq.br/9993234233817713
E-mail: raicastro@ifma.edu.br

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