

Anti-racist education: contributions to the field of mathematics

ARTICLE

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Abstract

This article aims to map theses and dissertations that address Ethnic-Racial Relations from an anti-racist educational perspective, focusing on the field of Mathematics. Data collection was carried out in the Catalog of Theses and Dissertations of the Coordination for the Improvement of Higher Education Personnel (CAPES). We used the terms "Ethnic-Racial Relations" AND "Mathematics," filtering research from 2016 to 2025, within the broad area of knowledge: multidisciplinary, and the area of knowledge: science and mathematics education. Following the established criteria, 12 dissertations and 1 thesis were selected, and their data were analyzed based on the Mapping of Educational Research. As a result, the analysis demonstrates the relevance of Ethnic-Racial Relations in the field of Mathematics Education, highlighting the importance of an anti-racist approach in the teaching of Exact Sciences. The selected research reveals that educators can promote a more inclusive and meaningful education that recognizes and values the cultural diversity of students.

Keywords: Social Justice. Mathematics Education. Law 10639/2003.

A educação antirracista: contribuições para a área de matemática

Resumo

Este artigo tem como objetivo mapear teses e dissertações que versam sobre as Relações Étnico-Raciais, em uma perspectiva educacional antirracista, com foco na área de Matemática. A coleta de dados foi realizada no Catálogo de Teses e Dissertações da Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES). Para tanto, utilizamos o termo "Relações Étnico-Raciais" AND "Matemática", filtrando as pesquisas, no período de 2016 a 2025; grande área do conhecimento: multidisciplinar; e área do conhecimento: ensino de ciências e matemática. Seguindo os critérios estabelecidos, foram selecionadas 12 dissertações e 1 tese que tiveram seus dados analisados, pautando-se no Mapeamento da Pesquisa Educacional. Como resultados, a análise demonstra a relevância das Relações Étnico-Raciais no campo da Educação Matemática, destacando a importância de uma abordagem antirracista no ensino das Ciências Exatas. As pesquisas selecionadas revelam que os educadores podem promover uma educação mais inclusiva e significativa, que reconhece e valoriza a diversidade cultural dos estudantes.

Palavras-chave: Justiça Social. Educação Matemática. Lei 10639/2003.

1 Introduction

Brazil is a country that was colonized by Europeans; consequently, the education present in Brazilian territory privileges the structure of whiteness and omits the history and culture of Indigenous, Afro-Brazilian, and African peoples, who, according to the Demographic Census website of the Brazilian Institute of Geography and Statistics (IBGE), totaled approximately 56.1% of the Brazilian population in 2022.

Ethnic-Racial Relations have become an increasingly central topic in social debates, especially regarding issues related to equality, diversity, discrimination, and inclusion. It is impossible to discuss Ethnic-Racial Relations without mentioning the importance of social movements, particularly the Black movement. According to Gomes (2005):

[...] it is important to highlight the role of social movements, in particular the Black Movement, which redefine and expand the social and racial issue in Brazilian society, giving it a political dimension and interpretation. In this process, social movements fulfill an important task not only of denouncing and reinterpreting Brazilian social and racial reality but also of re-educating the population, political institutions, and academia (Gomes, 2005, p. 39).

Since its creation, the movement has accumulated several achievements that are fundamental in the pursuit of equality.

From this perspective, the present article aims to map theses and dissertations that address Ethnic-Racial Relations from an antiracist educational viewpoint, with a focus on the field of Mathematics, as will be shown in the Methodology section. Before that, essential concepts and terms will be outlined to provide a precise understanding of Ethnic-Racial Relations, a topic that has gained increasing attention in recent years in many debates and discussions.

2 Ethnic-Racial Relations

To fully understand Ethnic-Racial Relations in Brazil, it is essential, above all, to recognize the historical importance of the Black movement, which, since the slavery period, has resisted the violence and inequalities imposed by a system marked by racism and exclusion. Symbolic and political achievements, such as the recognition of Zumbi dos Palmares as a national hero, are the result of a trajectory built on resistance, organization, and the formulation of demands for a more just and egalitarian society (Brazil, 2020). This historical struggle directly contributed to significant advances, such as the enactment of Law No. 10,639/2003, which made the teaching of African and Afro-Brazilian History and Culture mandatory in the school curriculum (Brazil, 2003).

Such legislation represents an important step in confronting structural racism and promoting antiracist education that values ethnic-racial diversity and encourages critical reflection on inequalities that still persist. Law No. 10,639/2003 does not only address the content to be taught but also proposes a structural change in the way Brazilian education deals with ethnic-racial issues. Its central categories—antiracist education, school curriculum, teacher education, appreciation of Afro-Brazilian culture, recognition of diversity, human rights, citizenship, and historical reparation—are fundamental for designing more just and inclusive educational policies.

Ethnic-Racial Relations can be seen as a “grand mosaic” reflecting the complexity of interactions among different human groups, each carrying its own history, culture, ancestry, and identity. From this perspective, we encounter profound issues of power, discrimination, inequality, equity, and social justice, which, from “colonial times to the present day, shape people’s lives, influencing opportunities, access to resources, and even the way we see ourselves and relate to one another” (Davis, 2018, p. 45).

Some terms and concepts need to be highlighted, such as the case of race, which is a complex concept. In Biology, it is commonly used to mean variety within a species. However, when analyzed in the context of sociopolitical relations, race refers to physical characteristics, such as skin color, hair type, and nose shape, which impact people’s social experiences. According to Fineto (2023, p. 20), “race is the basis of racism, that is, it uses

‘human races’ to justify obscene attitudes, such as, for example, the justification of slavery, which was based on the notion of superior and inferior races.”

Racism is the belief in the superiority of one race over another. We can exemplify that the concept of race exists only because racism exists, and thus it is racism that creates the division into races. But does the human race exist? To answer this question, Xavier (2023) explains that, according to more recent studies, the human race is unique, and its differences are only adaptations. For this author, “modern genetic studies have shown that there are no, scientifically or biologically, human races, although in the past it was a concept defended by researchers and scientists” (Xavier, 2023, p. 18).

It is interesting how the words we use can carry so much weight and meaning. Sometimes, people show a kind of hesitation in using the term “Black,” as if there were something wrong with it, when in fact it is a simple and straightforward description. What can happen is that, instead of recognizing someone’s skin color in a neutral way, people often opt for terms such as “brown” or “mulatto” as a way to soften or even avoid the word “Black.” That said, structural racism occurs in a “harmless” way—it is historical, social, and political, and unconsciously embedded in Brazilian society. It is fundamental to remember that calling someone “Black” is not an insult but a neutral and intrinsic characteristic of their identity. By becoming accustomed to using this word naturally and respectfully, we are recognizing diversity and the richness of human experiences, as well as contributing to the deconstruction of stereotypes and prejudices (Palazzi, 2023; Xavier, 2023).

One of the most complex and frequently misunderstood terms in the context of racism is prejudice, which often presents itself subtly and disguised. But first, we need to understand it. What is prejudice? According to Gomes (2005):

Prejudice is a negative and preformed judgment of members of a racial group, an ethnicity, a religion, or people who occupy another significant social role. This preformed judgment is characterized primarily by inflexibility, as it tends to be maintained without taking into account facts that might contradict it. It refers to a concept or opinion formed in advance, without careful consideration or knowledge of the facts. Prejudice encompasses the relationships between individuals and human groups. It includes the conception that an individual has of themselves as well as of others (Gomes, 2005, p. 54).

Based on its meaning, the reasons behind prejudice are as intricate as life itself. They come from all directions, from the family foundation to the social and political system, from human experience, intertwining and shaping into a complex web of influences. Imagine a web where each thread represents a piece of the puzzle that is prejudice: family, culture, education, even the stories we are told. All these threads intertwine, creating patterns that repeat and reinforce themselves over time. Gomes (2005, p. 54) emphasizes that “prejudice as an attitude is not innate. It is socially learned. No child is born prejudiced.”

Like prejudice, structural racism also involves injustices, and both contribute to the inequality and marginalization of racial groups. Racism has a structural character, being a fundamental part of the economic and political construction of society (Almeida, 2019).

Structural racism goes beyond individual acts, manifesting itself in the very foundations of society as a system of oppression that perpetuates inequalities. Its institutional nature reveals how economic and political structures have historically been shaped to privilege certain groups, creating enduring asymmetries of power. This understanding dismantles the idea of “reverse racism,” as it shows that racial oppression requires a consolidated apparatus of domination, which marginalized groups do not possess.

It is important to note the idea that Black people cannot be considered racist, since reverse racism does not exist; that is, a historically oppressed social group cannot reproduce racist actions against another group that has always been in a position of privilege. Therefore, only white people can be considered racist (Kilomba, 2019).

However, it is important to recognize that racism can manifest through discriminatory and prejudiced behaviors. That said, Black people can indeed reproduce racist behaviors and speech in daily life, even though reverse racism does not exist and they do not hold the structural power of whiteness, a term that will be addressed below. In this way, the internalization of racist ideologies by the Black population is a result of the influence of structural racism present in our country (Kilomba, 2019).

Whiteness is a systematic, social, and cultural structure that confers privilege and power to a certain group that aligns with social oppression. Thus, there is no problem with being white, but rather with appropriating one's privileges while devaluing other racial identities and committing racist acts. On this subject, Bento (2003) emphasizes that:

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They recognize racial inequalities, but they do not associate these racial inequalities with discrimination, and this is one of the first symptoms of whiteness. Are there racial inequalities? Yes! Is there a Black deficit? Yes! Does this have anything to do with white people? No! It is because Black people were enslaved, that is, an inert legacy of a past in which whites seem to have been absent (Bento, 2003, p. 3).

This conveniently constructed narrative allows whiteness to feel no need for change or reparation. By separating racial inequality from present discrimination and relegating the effects of racism to the past, a cycle of perpetuation of these inequalities is created.

This stance reinforces the idea that the responsibility for the current condition of the Black population lies solely with historical circumstances, and not with the social, political, and economic structures that continue to privilege whiteness. This is a way of denying the continuity of racism and, consequently, avoiding the discomfort that reflection on one's own privilege may cause. According to Santana and Castro (2022, p. 84), the "difficulties in achieving equity in Brazil may be more complex because they are less explored." In this way, whiteness remains intact, without cracks, protected by a logic that absolves it of blame and exempts it from commitments to equity.

However, by denying this association between racial inequalities and discrimination, the invisibility of structural racism is perpetuated. Whiteness, in this context, operates as a selective blindness that allows comfort in maintaining a false neutrality. It is as if history and its consequences were treated as a frozen narrative, decontextualized from the present, preventing society from recognizing that racism is not merely a historical inheritance but a living reality, shaped and reinforced daily.

This deliberate disconnection not only preserves the status quo but also prevents affirmative actions and reparative policies from being seen as necessary and urgent. As

long as racism is treated as a ghost of the past, opportunities for real change will continue to be neglected, and inequalities perpetuated. For transformation to occur, whiteness must acknowledge its active role in maintaining these inequalities and be willing to confront the structures that sustain racism in our society.

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In the Brazilian context, the use of the terms “Black” and “Brown” (*Brown*, according to IBGE classification) goes beyond simple skin color classifications; it also involves issues of identity and ancestry. The distinction between Black and Brown regarding access to social benefits and other important rights (or even the denial of these rights) is so small statistically that they can be grouped into a single category: Black. This is because racism in Brazil does not significantly differentiate between Black and Brown, contrary to what many people believe (Santos, 2002).

The term “Black” is used to describe individuals with very dark skin. These people generally present phenotypic characteristics, such as skin color, nose shape, hair texture, and other physical traits, which are directly associated with their African ancestors. Historically, these traits have been an important marker in the construction of Black identity in Brazil.

On the other hand, the term “Brown” encompasses a greater diversity of phenotypes. Pardo individuals have lighter skin compared to Black individuals and are often the result of the extensive miscegenation that characterizes the Brazilian population. This miscegenation involves the combination of ethnic heritages from whites, Blacks, and Indigenous peoples, resulting in a variety of physical characteristics. Thus, Brown identity reflects this complex cultural and genetic heritage.

Furthermore, the racial categorization conducted by the IBGE (2022) is an attempt to reflect the diversity of the Brazilian population and to recognize the different experiences lived by these groups. It is a way to give visibility to racial issues and promote policies that combat racism and foster equality. Therefore, understanding the nuances between being Black or Brown in Brazil is essential to grasp the country’s complex racial dynamics. This is a matter involving history, culture, identity, and the ongoing struggle for recognition and equality. Regarding identity, Gomes (2005) states:

Identity is not something innate. It refers to a way of being in the world and with others. It is an important factor in the creation of networks of relationships and cultural references of social groups. It indicates cultural traits expressed through linguistic practices, festivals, rituals, eating behaviors, and popular traditions—civilizational references that mark the human condition (Gomes, 2005, p.41).

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Consequently, if we lived in an egalitarian world that celebrates diversity, all these terms, concepts, and debates would not be necessary. However, since we do not live in such a reality, this discussion becomes essential for promoting a more just society: raising awareness and education, combating structural inequalities, and implementing policies aimed at equity. Santana and Castro (2022, p. 84) emphasize that “the pursuit of equity needs to be part of a larger movement.” It is evident that constructing an equal and fair society in Brazil is challenging, given the many historical factors that have influenced the country to perpetuate social, economic, and cultural inequalities, reflected in power structures, access to opportunities, and the maintenance of privileges. The methodology used in the development of this work will be presented next.

3 Methodology

This research is characterized by a qualitative, bibliographic approach (Lüdke & André, 1986), aimed at analyzing academic productions (dissertations and theses) related to the teaching of Mathematics and Ethnic-Racial Relations.

Among the methodological procedures adopted in this study, the use of Mapping in Educational Research (Biembengut, 2008) stands out as a strategy for data collection, organization, and analysis. As described by the author, this is a methodology that permeates all aspects of everyday and academic life. When we estimate the time needed to travel from home to the university, or when planning a lesson on vectors, we are, in fact, applying the concept of mapping. This methodological approach is not limited to academic situations and is notable for its relevance both to educational research and the teaching of Mathematics.

To constitute the data for this research, a search was conducted in the CAPES Theses and Dissertations Catalog to capture dissertations and theses that converge with the topic. The keyword “Ethnic-Racial Relations” AND “Mathematics” was used in the search, along with the following filters: period—last 10 years, i.e., 2016 to 2025; broad area—multidisciplinary; and knowledge area—science and mathematics education. This resulted in 13 studies, comprising 12 dissertations and 1 thesis.

The selected studies were read with the aim of understanding the different perspectives and structures presented by the authors. It is noteworthy that, of the 12 dissertations and 1 thesis, nine authors identified in their research as Black, and ten were written by women. The studies are presented in Box 1.

Box 1 – Studies Considered for Analysis from 2016 to 2025

Dissertations	Title	Author(s)	Institution
D1	Matemática e africanidades brasileiras: narrativas e professores(as) negros(as) sobre o trabalho com Relações Étnico-Raciais no cotidiano escolar	Ronaldo Tomaz de Andrade Silva	Federal University of Paraná
D2	A formação docente na Licenciatura em Matemática da UFG: a colonização/decolonização do conhecimento no currículo na perspectiva das relações étnico-raciais	Devaneide Barbosa de Sousa	Federal University of Goiás
D3	No escurinho do cinema! Erer e produções cinematográfica em aulas de matemática no ensino médio	Marilene Mendonça de Oliveira	Federal University of Sergipe
D4	Conhecimento Matemático Africano: Jogo Igba-Ita para o ensino e aprendizagem de noções probabilísticas	João Víctor da Silva Gabriel	Federal University of Pernambuco
D5	Educação financeira numa perspectiva antirracista: interpelando projetos hegemônicos de poder a partir de movimentos de auto-organização financeira negra	Tamires Torres da Purificação	Federal University of Rio de Janeiro
D6	A abordagem da Educação Das Relações Étnico-Raciais na Formação de professores de Ciências Biológicas, Física, Matemática e Química	Monique Albuquerque Ferreira	Federal Institute of Education, Science and Technology of São Paulo
D7	A Cultura Africana e Estudos de Geometria Fractal na Formação de Professores de Matemática	Lucilene Cândido Rocha	Federal Institute of Education, Science and Technology of São Paulo

Dissertations	Title	Author(s)	Institution
D8	As Relações Étnico-Raciais no ensino de Matemática: um estudo com professores dos anos finais do ensino fundamental	Maria Gabriela de Figueiredo Furtado	Federal University of Pernambuco
D9	Educação das Relações Étnico-Raciais no ensino de Matemática: Percepções de professores de Matemática no contexto de uma escola pública do município de Triunfo-Pe	Joseilda Aparecida da Silva Santos	Federal University of Pernambuco
D10	Educação Matemática e Educação para as Relações Étnico-Raciais: Uma revisão sistemática da leitura	Maria Aparecida dos Santos Fineto	Federal Technological University of Paraná
D11	Educação Matemática Antirracista: um estudo com professores da cidade de Agrestina - PE	José Adelton Cordeiro de Souza	Federal University of Pernambuco
D12	Reflexão educacional em busca da melhoria das relações étnico-raciais no âmbito da Universidade Federal de Alagoas	Júlia Cláudia dos Santos	Federal University of Alagoas
T1	<i>A duniya só diagni</i> propostas para a descolonização do didático no ensino de história, ciências da natureza e matemática no 1º ano do ensino médio: Um sentido para a Origem do mundo e da Vida a partir da Astronomia Dogon	Rosiléia Santana da Silva	Federal University of Bahia

Source: CAPES Theses and Dissertations Catalog, 2024.

Based on the data collection, the next step involved the classification and organization of the data. According to Biembengut (2003):

As data are collected, one should seek to organize them in a table, flowchart, graph, or scheme—map—in order to provide an increasingly complete overview of the entities under study. Even if, at first, this arrangement is not the most appropriate, as clarity improves, a more suitable organization can be established. One approach is to mark entities whose traits show some similarity, affinity, or interaction. This identification of traits can facilitate understanding (Biembengut, 2003, p. 8).

To visualize these affinities, the following criteria were followed: reading the title, abstract, keywords, introduction, and objectives. This analysis allowed the identification of the central aspects of the academic productions, which will be presented and discussed.

The results obtained from the analysis of the selected dissertations and thesis are presented below. Box 2 is organized into three columns: Dissertations/Thesis, Objectives (transcribed from the original works), and Research Focus. The categorization of research focuses is related to Law No. 10,639/03, which amends the LDB—Law of Guidelines and

Bases of National Education—to include in the official curriculum of the Education Network the mandatory theme “African and Afro-Brazilian History and Culture,” among other provisions.

Box 2 – Objectives and Research Focus of the Studies

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Dissertations / Thesis	Objective	Research focus
D1	To constitute historical sources based on interviews conducted from the perspective of Thematic Oral History methodology with three Black Mathematics teachers working in schools in the state of Paraná, as well as a self-interview.	Antiracist Education
D2	To analyze the perceptions of students who have completed the Supervised Internship of the Mathematics Teaching degree program at UFG regarding the academic training they received to work in Basic Education, from the perspective of Ethnic-Racial Relations.	Antiracist Education
D3	To analyze how the use of film productions can favor the implementation of Ethnic-Racial Relations Education (ERER) and the learning of mathematical content in high school classes.	Antiracist Education
D4	To investigate a didactic proposal through the African game Igba-Ita on probabilistic notions with 1st-year high school students from the perspective of Ethnic-Racial Relations Education (ERER).	Learning
D5	To investigate financial education from an antiracist perspective, valuing movements (conscious or not) of financial organization of historically subordinated people, particularly Black people.	Black Financial Education
D6	To analyze the approach to Ethnic-Racial Relations Education in teacher training of graduates from degree programs in Biological Sciences, Physics, Mathematics, and Chemistry at IFSP/SP.	Teacher Education
D7	To organize a formative movement that could consciously contribute to the initial training of future Mathematics teachers.	Teacher Education
D8	To analyze, with Basic Education teachers, possible articulations between Mathematics teaching and Law No. 10,639/2003 regarding Ethnic-Racial Relations.	Learning
D9	To investigate the perception of Mathematics teachers at a school regarding the perspective of an antiracist education in this discipline, articulated with Law No. 10,639/2003.	Antiracist Education
D10	To conduct a systematic literature review (SLR) in the context of Mathematics Education (ME) addressing Education for Ethnic-Racial Relations (ERER).	Antiracist Education
D11	To investigate the knowledge and understanding of teachers who teach Mathematics in public schools of the municipal education network of Agrestina – PE, regarding the perspective of Antiracist Mathematics Education.	African and Afro-Diasporic Mathematical Knowledge
D12	To conduct a critical reflection exercise on racist practices in the academic environment, based on the author's own experiences in the Graduate Program in Science and Mathematics Education at the Federal University of Alagoas (UFAL).	Teacher Education in Science and Mathematics

T1	To analyze a Study and Research Pathway (PEP), integrating Dogon Astronomy, focused on decolonized didactic proposals for teaching History, Natural Sciences, and Mathematics in the 1st year of high school.	Teacher Education
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Source: CAPES Theses and Dissertations Catalog, 2024.

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Box 2 shows that the mapped studies predominantly focus their objectives on the analysis and proposition of pedagogical, formative, and investigative practices related to Ethnic-Racial Relations Education within the scope of Mathematics Education. In this context, there is a recurrence of studies addressing antiracist education, teacher training, and the articulation of Mathematics teaching with Law No. 10,639/2003, indicating that these topics have been assumed as relevant objects of investigation. Moreover, the presence of research addressing African games, film productions, African and Afro-Diasporic knowledge, as well as decolonized didactic proposals, demonstrates the diversity of theoretical and methodological approaches mobilized to address the subject.

In turn, the analysis of the objectives reveals that a significant portion of the works is dedicated to understanding the perceptions, experiences, and practices of teachers, pre-service teachers, and students, as well as processes of initial and continuing teacher education. This recurrence suggests that teacher training and the implementation of Law No. 10,639/2003 in Mathematics teaching remain structuring axes of research in the field, indicating the need to deepen discussions and continue studies that contribute to the consolidation of pedagogical practices committed to Ethnic-Racial Relations Education.

Considering a critical perspective and a commitment to antiracist education grounded in Law No. 10,639/2003, we developed a categorization of the dissertations and thesis, which can be seen in Box 3. For this purpose, we defined the following categories of analysis: antiracist education; school curriculum and teacher education; valorization of Afro-Brazilian culture, recognition of diversity, and promotion of human rights and citizenship. This classification highlights the main thematic axes present in the studies, allowing us to understand how each work engages with central topics for antiracist education.

4 Results and Discussion

Based on the selected methodological procedures and the reading of the chosen dissertations and thesis, Box 3 presents the organization of the studies according to categories constructed from Law No. 10,639/2003.

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Box 3 – Categories of the Dissertations and Thesis

Categories	Dissertations and thesis
Antiracist Education	D1, D2, D3, D4, D5, D6, D7, D8, D9, D10, D11, D12 and T1
School Curriculum / Teacher Education	D1, D2, D5, D6, D7, D8, D9, D10, D11, D12, T1
Valorization of Afro-Brazilian Culture / Recognition of Diversity / Human Rights and Citizenship	D1, D2, D3, D4, D5, D7, D9, D10, D12

Source: Prepared by the authors (2025).

Box 3 shows that antiracist education is present in all the analyzed dissertations and thesis, consolidating itself as the central axis of the studies. Topics such as school curriculum/teacher education appear in ten works, reinforcing their importance for the implementation of Law No. 10,639/2003.

However, the valorization of Afro-Brazilian culture/recognition of diversity/human rights and citizenship is the least addressed category, present in nine works, representing approximately 69% of the studies. This low representation reveals an important gap in the discussion of historical justice and the recognition of structural violence faced by the Black population.

Dissertations D1, D2, D5, D7, D9, D10, and D12 stand out as they encompass all three categories, serving as references for exploring fundamental topics in an integrated manner, allowing a more comprehensive analysis of the interconnections among the classifications in Box 3.

Overall, the data reflect a collective commitment to the promotion of antiracist education, although the unequal distribution of categories points to ongoing challenges in

broadening and deepening certain themes, particularly those related to antiracist education. The following sections present the results and discussion of this research based on these categories.

The analysis of the dissertations and thesis, based on the categories presented in Box 3, reveals important intersections and distinctions in the treatment of Ethnic-Racial Relations in Mathematics Education.

The *antiracist education* category, present in all studies, reaffirms the centrality of Law No. 10,639/2003 as a guiding axis for the discussions. The dissertations and thesis adopt different strategies to address structural racism, prejudice, and racial discrimination present in education.

In D1, the author, through *Oral History*, highlights the identity resistance of Black teachers and their pedagogical practices. This valorization of memory and individual trajectory is echoed in Souza (2023), D11, who emphasizes sensitive listening as a starting point for antiracist teacher education.

In Gabriel (2022), D4, and Rocha (2023), D7, the confrontation with racism occurs through the inclusion of elements of Afro-Diasporic culture in the teaching of specific content, such as probability and fractal geometry, challenging the notion of neutral and universal Mathematics. This proposal for epistemological re-signification is further developed in Silva's thesis (2023), T1, which proposes a curriculum grounded in Dogon cosmology as a way to decolonize teaching practices and the curricular structure itself. A significant advance is observed here, as while most dissertations in this category propose localized or punctual practices, the thesis demonstrates a systemic and transdisciplinary transformation, integrating Mathematics, History, Astronomy, and African Philosophy.

In the *School Curriculum / Teacher Education* category, the focus is on the urgency of rethinking both the content taught in classrooms and the methods of teacher training. Dissertations such as Sousa (2020), D2, Ferreira (2022), D6, and Furtado (2023), D8, emphasize the omission or superficial treatment of ethnic-racial themes in Mathematics teacher education curricula, highlighting that early training still reproduces Eurocentric logics. These studies converge in pointing out the need for critical, antiracist teacher

education that goes beyond the insertion of isolated content and encompasses a broad decolonial understanding.

This critique is also present in Santos (2023a), D9, and Santos (2023b), D12, who discuss the effects of institutional and structural racism on teaching practices and the formation of professional identities. Silva's thesis (2023), T1, stands out not only for identifying these issues but also for proposing a concrete formative model: the Study and Research Pathway (PEP), grounded in Activity Theory and Southern Epistemologies inspired by the Anthropological Theory of the Didactic, as a tool to foster teaching practices that recognize, incorporate, and valorize Black epistemologies.

The third category in Box 3 articulates cultural, historical, and political aspects in the construction of a Mathematics Education that recognizes diversity and combats racial inequality.

Dissertations such as Rocha (2023), D7, Purificação (2022), D5, and Gabriel (2022), D4, incorporate traditional African-based knowledge and practices as objects of teaching, advocating for their inclusion in the school curriculum.

Gabriel (2022), D4, in addressing the Igba-Ita game, and Purificação (2022), D5, in investigating community financial knowledge, exemplify how Mathematics can be approached through popular experiences, challenging the “hegemony” of Western Eurocentrism. D5 concludes that “[...] there is a historical place constructed for the social inferiority of Black people, sustained by structural racism and problems of income inequality and employment (particularly formal employment)” (Purificação, 2022, p. 152). By identifying the effects of these dynamics, the author shows how certain historical conditions contribute to restricting opportunities and limiting access to basic rights, perpetuating contexts of vulnerability and exclusion.

Rocha (2023), D7, when working with fractals present in hairstyles and African sculptures, also introduces the debate on aesthetics and ancestry into Geometry teaching. These proposals directly dialogue with Silva's thesis (2023), T1, which values African cosmologies as complete knowledge systems. The difference lies in the degree of articulation: while the dissertations highlight isolated practices of cultural valorization, the

thesis integrates these elements into a continuous and structured formative pathway, based on listening, intercultural dialogue, and collective knowledge construction.

Based on this analysis, as well as the commitment to antiracist education grounded in Law No. 10,639/2003 and discussed earlier, we propose in Box 4 a new categorization of the analyzed dissertations and thesis. The aim is to identify how these studies relate to the field of Mathematics. For this analysis, the following themes were identified: financial education, games, mathematics education, and mathematical content and its approaches

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Box 4 – Categories of the Dissertations and Thesis

Categories	Dissertations and thesis
Financial Education	D5
Games	D4, D10
Mathematics Education	D1, D2, D3, D6, D7, D8, D9, D10, D11, D12, T1
Mathematical Content and its Approaches	D1, D2, D3, D4, D5, D6, D7, D8, D9, D11, D12, T1

Source: Prepared by the authors (2025).

Box 4 aims to understand how the analyzed studies relate to the field of Mathematics while maintaining a commitment to antiracist education, as established by Law No. 10,639/2003. The new categorization reveals that, although ethnic-racial themes are the central focus of the studies (as seen in Box 3), there is a consistent effort to articulate these issues with specific content and practices within the field of exact sciences.

The “Mathematics Education” category is the most recurrent, appearing in 11 of the 13 studies (dissertations and thesis), which demonstrates the authors’ intention to discuss ethnic-racial relations within the specific context of Mathematics, rather than treating them in a generic or peripheral manner. This shows that school mathematics can indeed be a powerful space for confronting racism and valuing Afro-Brazilian culture, provided it is accompanied by pedagogical intentionality.

The “Mathematical Content and Its Approaches” category, present in 12 studies, reveals a strong concern with revising and re-signifying the mathematical knowledge

worked on in classrooms. On one hand, this category points to practices that seek to contextualize mathematics within diverse cultural frameworks, which aligns with the objectives of antiracist education.

On the other hand, there are more specific categories, such as “Financial Education”, present in D5, and “Games”, present in D4 and D10. This may indicate two possibilities: either these themes are still little explored from an antiracist perspective within the exact sciences, or there is a predominance of more theoretical and curricular approaches in the analyzed studies. In both cases, these categories reveal potential areas for further exploration, especially considering the social role of financial education in the fight against structural inequalities that predominantly affect the Black population.

It is important to note that dissertations D1, D2, D3, D6, D7, D8, D9, D10, D11, D12, and T1 appear in multiple categories, demonstrating the complexity and scope of their proposals. This reinforces the idea that mathematics, when approached critically, can be an instrument of social transformation and the promotion of equity.

The analysis of Box 4 complements that of Box 3 by showing that the studies not only incorporate the antiracist agenda in legal and political terms but also seek to integrate this commitment into mathematical practice through content, methodologies, and pedagogical practices. However, the unequal presence of certain categories suggests the need to encourage research that explores new didactic possibilities and themes, such as games and financial education, within this perspective.

5 Final considerations

This study explored Ethnic-Racial Relations within the Brazilian educational context, with a particular focus on the field of Mathematics. The analysis consisted of an exploration of the content addressed in the selected works, intentionally organizing them according to identified themes, which allowed for comparisons between different approaches. The implementation of policies such as Law 10,639/03, which makes the inclusion of African History and Afro-Brazilian Culture in the school curriculum mandatory,

represents an important step in the pursuit of educational equity and the recognition of the historical contributions of marginalized peoples.

The study of the selected dissertations and thesis revealed that Mathematics Education can play a crucial role in promoting social justice by integrating antiracist perspectives and valuing cultural diversity in pedagogical practices. The use of mapping methodologies, as proposed by Biembengut (2008), proved effective in identifying and organizing current trends in educational research, offering a clearer view of the intersections between race, education, and mathematics.

Furthermore, the discussion of fundamental concepts such as race, structural racism, whiteness, identity, and prejudice highlighted the complexity of these issues and the need for pedagogical approaches that foster awareness and social transformation. Recognizing that all individuals possess a unique and valuable identity is essential for building a more inclusive and equitable educational environment.

Therefore, we consider that education for Ethnic-Racial Relations is not only a matter of historical justice but also a contemporary necessity for the development of a truly democratic and plural society. It is imperative that educators, policymakers, and society at large commit to confronting and dismantling the power structures that perpetuate racial inequality, promoting education that celebrates diversity and fosters respect and dignity for all. As a recommendation for future research, it is pertinent to deepen studies that analyze, in a more specific way, how academic productions have addressed and challenged racial inequality present in the Brazilian educational context.

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