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PERCEPTIONS OF THE INTEGRATION BETWEEN ENVIRONMENTAL EDUCATION AND INCLUSIVE EDUCATION: A CRITICAL ANALYSIS

PERCEPÇÕES SOBRE A INTEGRAÇÃO ENTRE EDUCAÇÃO AMBIENTAL E EDUCAÇÃO INCLUSIVA: UMA ANÁLISE CRÍTICA

PERCEPCIONES SOBRE LA INTEGRACIÓN ENTRE LA EDUCACIÓN AMBIENTAL Y LA EDUCACIÓN INCLUSIVA: UN ANÁLISIS CRÍTICO

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ABSTRACT

This article aims to investigate teachers' perceptions regarding the integration between Environmental Education (EE) and Inclusive Education (IE) in the Brazilian educational landscape, focusing specifically on the state of Ceará. Through a critical analysis of current laws, an adapted integrative review (conducted on the Google Scholar platform with a time frame between 2015 and 2025, using descriptors in Portuguese) and the identification of obstacles in public policies, the study reveals a significant gap between normative discourse and school reality. The results indicate that, although Brazil has robust legislation on EE and IE, the application of these guidelines in schools is marked by weaknesses. Teachers report difficulties in articulating environmental content transversally and in adapting methodologies for students with disabilities, due to a lack of continuing education, insufficient pedagogical resources, and limited institutional support. In Ceará, in particular, isolated and disconnected actions from the curriculum predominate, reflecting a superficial approach to these themes. The intersection between EE and IE emerges as an innovative perspective, capable of promoting pedagogical practices that unite sustainability and equity. However, this integration is still neglected, both in literature and in daily school life. The implementation of this proposal requires the engagement of managers, educators, and the community, aiming at the formation of critical citizens aware of their environmental and social responsibilities.

KEYWORDS: Continuing education. Educational equity. Inclusive environmental education.

RESUMO

Este artigo tem como objetivo investigar as percepções dos professores sobre a integração entre Educação Ambiental (EA) e Educação Inclusiva (EI) no contexto educacional brasileiro, com foco específico no estado do Ceará. Por meio de uma análise crítica das leis vigentes, uma revisão integrativa adaptada (realizada na plataforma Google Scholar com recorte temporal entre 2015 e 2025, usando descritores em língua portuguesa) e da identificação de obstáculos nas políticas públicas, o estudo revela uma lacuna significativa entre o discurso normativo e a realidade escolar. Os resultados indicam que, embora o Brasil possua legislação robusta sobre EA e EI, a aplicação

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dessas diretrizes nas escolas é marcada por fragilidades. Os professores relatam dificuldades em articular o conteúdo ambiental de forma transversal e em adaptar metodologias para alunos com deficiência, devido à falta de formação continuada, recursos pedagógicos insuficientes e apoio institucional limitado. No Ceará, em particular, predominam ações isoladas e desconectadas do currículo, refletindo uma abordagem superficial desses temas. A intersecção entre EA e EI emerge como uma perspectiva inovadora, capaz de promover práticas pedagógicas que unem sustentabilidade e equidade. Contudo, essa integração ainda é negligenciada, tanto na literatura quanto no cotidiano escolar. A implementação desta proposta requer o envolvimento de gestores, educadores e da comunidade, visando à formação de cidadãos críticos e conscientes de suas responsabilidades ambientais e sociais.

PALAVRAS-CHAVE: Educação ambiental inclusiva. Equidade educacional. Formação continuada.

RESUMEN
Este artículo tiene como objetivo investigar las percepciones del profesorado sobre la integración entre la Educación Ambiental (EA) y la Educación Inclusiva (EI) en el contexto educativo brasileño, con especial atención al estado de Ceará. A través de un análisis crítico de las leyes vigentes, una revisión integradora adaptada (realizada en la plataforma Google Scholar con un marco temporal entre 2015 y 2025, utilizando descriptores en portugués) y la identificación de obstáculos en las políticas públicas, el estudio revela una brecha significativa entre el discurso normativo y la realidad escolar. Los resultados indican que, si bien Brasil cuenta con una legislación sólida sobre EA e EI, la aplicación de estas directrices en las escuelas presenta deficiencias. El profesorado reporta dificultades para articular el contenido ambiental de forma transversal y para adaptar las metodologías a estudiantes con discapacidad, debido a la falta de formación continua, recursos pedagógicos insuficientes y un apoyo institucional limitado. En Ceará, en particular, predominan las acciones aisladas y desconectadas del currículo, lo que refleja un enfoque superficial de estos temas. La intersección entre EA e EI emerge como una perspectiva innovadora, capaz de promover prácticas pedagógicas que unen sostenibilidad y equidad. Sin embargo, esta integración aún se descuida, tanto en la literatura como en la vida cotidiana de las escuelas. La implementación de esta propuesta requiere la participación de directivos, educadores y comunidad, buscando formar ciudadanos críticos y conscientes de sus responsabilidades ambientales y sociales.

PALABRAS CLAVE: Educación ambiental inclusiva. Equidad educativa. Educación continua.

1. INTRODUCTION

Understanding the issue of climate change is becoming increasingly urgent in global, national, and local scenarios, highlighting the need to incorporate this debate into basic education. According to the Intergovernmental Panel on Climate Change [1], the impacts of climate change are particularly severe in regions with greater socioeconomic vulnerability, requiring immediate and integrated actions. In this context, environmental education (EE) plays a crucial role in raising awareness among teachers and students about the importance of changing daily attitudes and habits, promoting awareness of environmental issues and the possibilities of mitigating their effects.

EE and inclusive education (IE) are fundamental pillars for building a more equitable and sustainable society, with the 1988 Brazilian Federal Constitution, in article 225, establishing that environmental protection is the duty of the State, also integrating education as an essential mechanism for this [2]. EE has been recognized as a fundamental axis for promoting sustainability

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and climate awareness, as established by Federal Law n° 9.795/1999, which institutes the National Environmental Education Policy, promoting its incorporation at all levels and modalities of education [3].

The integration of EE into the basic curriculum is essential to form critical citizens, capable of identifying and acting on contemporary environmental problems; however, despite legal advances, the effective implementation of EE in schools still faces obstacles, such as the lack of adequate teacher training, the absence of specific teaching materials, and discontinuity in educational actions [4].

Specifically, in the state of Ceará, several laws such as: n° 14.892/2011 (which deals with Environmental Education and establishes the State Policy on Environmental Education), n° 16.128/2016 (which provides for the creation and implementation of the “Green Municipality Seal”), n° 16.146/2016 (which deals with the State Policy on Climate Change), n° 16.290/2017 (which provides for the creation of the “Sustainable School Seal” and grants the Sustainable School Award), reinforce the importance of including this theme in the school environment [5-8].

However, despite all the legal basis, the practical implementation of these policies faces challenges related to teacher training and inadequate infrastructure in public schools, demonstrating similarity to the national panorama; Difficulties in articulating environmental content into the school curriculum in a cross-cutting and critical way often result in sporadic practices or those linked to commemorative dates [9].

In parallel, IE in Brazil has also evolved in recent decades; based on guidelines such as the National Policy on Special Education from the Perspective of Inclusive Education [10] and the Brazilian Inclusion Law (BIL) in 2015 [11], access for students with disabilities to regular schools has been significantly expanded [12].

IE, based on the BIL, ensures educational rights for people with disabilities, requiring curricular adaptations and highlighting the need to promote access and permanence for all students under conditions of equity; in addition to Specialized Educational Services (SES), guaranteed by decree n° 7.611/2011 [13].

It is a fact that continuing teacher training is one of the main factors in ensuring the effectiveness of educational inclusion, especially in contexts where the diversity and complexity of students' needs are broad [12].

In Ceará, research shows that, although there is recognition of the importance of school inclusion, teacher training and support from education networks remain insufficient [14].

The National Common Curriculum Base (NCCB) emphasizes the need for comprehensive student education, providing for the development of skills related to citizenship, sustainability and inclusion [15].

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The articulation between EE and IE is still little explored in the literature and in pedagogical practice and despite the relevance of this approach, a significant gap is observed in teacher training, especially in relation to the intersection between EE and IE. Many teachers face challenges related to the lack of specific training, compromising the application of this knowledge in the classroom [4].

The convergence between EE and IE allows us to observe and understand Inclusive Environmental Education (IEE) not only as a didactic strategy, but under a broader and more humanized concept. From this perspective, IEE transcends the simple adaptation of content, configuring itself as a pedagogical model that recognizes the interdependence between social vulnerability, disability, and the environmental crisis; presupposing that sustainability is inseparable from social justice and full accessibility, requiring that the environment be understood from the perspective of functional diversity.

Given this scenario, this article aims to critically analyze teachers' perceptions of the integration between EE and EI in their pedagogical practices within the Brazilian educational context, with an emphasis on the state of Ceará, considering the scarcity of studies on this intersection.

2. METHODS

This study adopted a qualitative, comparative, and critical approach, based on an integrative literature review, adapted from the protocol of Botelho, Cunha, and Macedo [16], aiming to analyze the integration between environmental education (EE) and inclusive education (IE) in the Brazilian context, with an emphasis on Ceará. The bibliographic survey was carried out using the Google Scholar platform, delimiting the period from 2015 to 2025 as the time frame. The choice of this database is justified by its more targeted scope to the Brazilian scenario, integrating not only journal articles, but also complementary literature (monographs, dissertations, theses, and conference proceedings), essential for mapping a topic with low density of publications indexed in other platforms of greater academic relevance.

As inclusion criteria, the following were established: documents published entirely in Portuguese; that presented the specific descriptors (“education”; “environmental education”; “inclusive education”; and “inclusive environmental education”) strictly in the titles; and works that discussed the pedagogical intersection between the themes. Duplicate texts and materials without explicit scientific basis were excluded.

The selection procedure took place in four stages: initial survey by descriptors; quantitative screening by titles; technical reading of the abstracts to verify adherence to the theme; and critical analysis of the full content. Although it is recognized that the use of a single database and the restriction to titles may omit tangential discussions present in the body of the texts, this rigor ensures that the data obtained at the end of the refinement focus on the theoretical centrality of Inclusive Environmental Education (IEE).

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3. RESULTS AND DISCUSSION

Based on the literature review conducted, the general results obtained are illustrated in Figures 1 and 2.

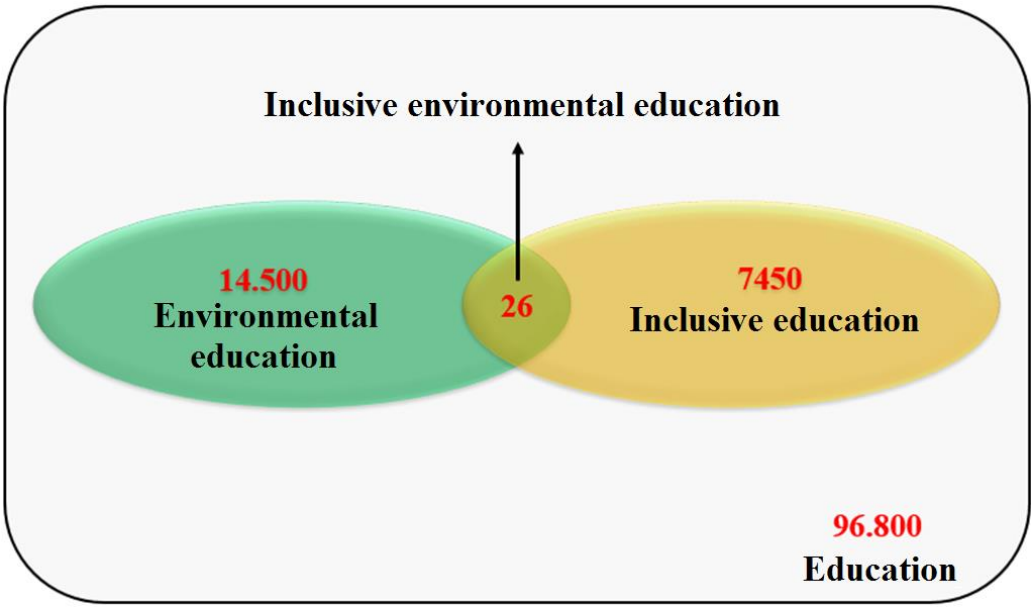

Fig 1. Illustrative diagram of the number of publications with the terms “education”, “environmental education”, “inclusive education”, and “inclusive environmental education” in the titles of documents published. The data were obtained through the Google Scholar platform, using a refinement of the period 2015-2025 and only documents published in portuguese.

Using the term "education" in the publication titles yielded a total of 96.800 documents. This significant number confirms the centrality of education as a multidisciplinary field of investigation, especially in Brazilian contexts. However, as we refine the searches using other terms in the titles, a significant decrease in the number of publications is observed; with the term "environmental education" in the title, 14.500 documents were found (≈ 15% of the total), with the term "inclusive education" 7.450 documents (≈ 7.7% of the total), and when refining to "inclusive environmental education," the number plummeted to only 26 publications (≈ 0.027% of the total).

The significant number of documents and works related to Environmental Education (EE) and Inclusive Education (IE) separately reveals that both themes have consolidated academic and institutional recognition, although many challenges remain, especially regarding the effectiveness of applied practices; however, the near invisibility of the term "inclusive environmental education" is symptomatic. This quantitative result alone reveals a clear and enormous gap in the national scientific literature regarding the convergence between EE and inclusive practices, which reinforces the relevance of the proposed discussion. Figure 2 clearly illustrates the distribution of the 26

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documents published in portuguese and found in the aforementioned period using the term "inclusive environmental education" (IEE).

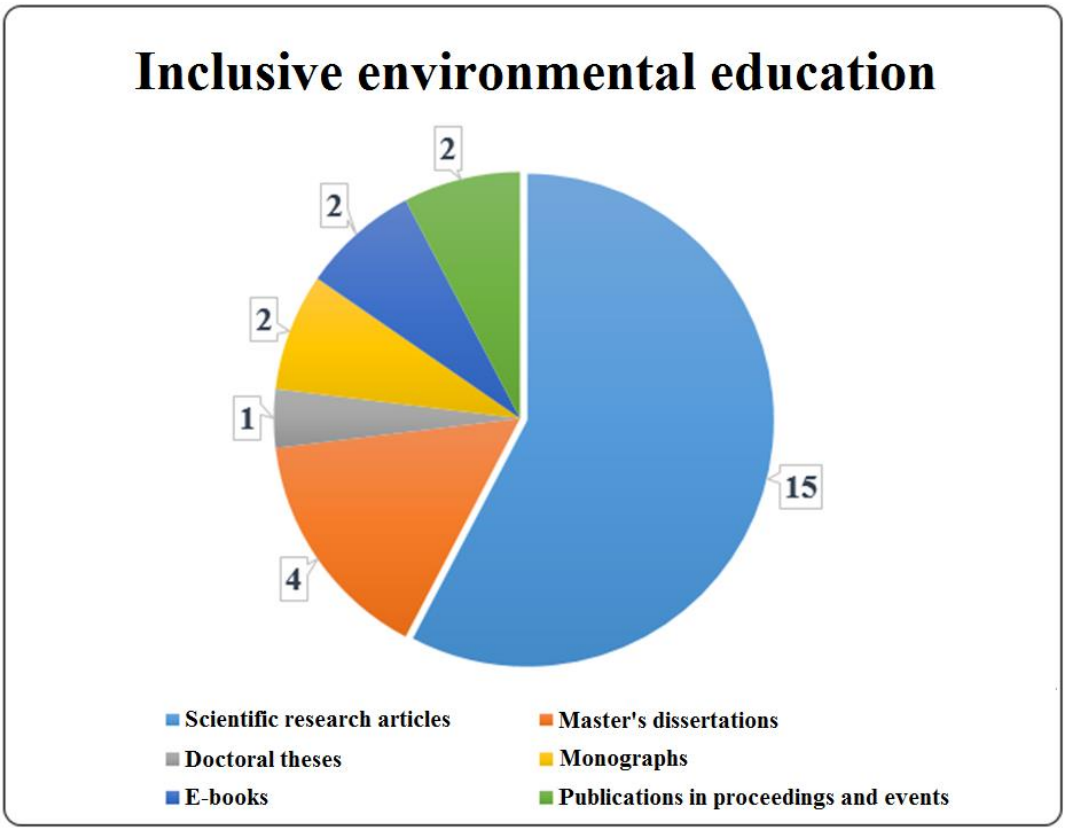

Fig 2. Illustrative diagram of the quantitative distribution of document types published with the term “inclusive environmental education” in the title. The data were obtained through the Google Scholar platform, using simultaneous refinement in the period 2015-2025 and only for documents published in portuguese.

It was found that 15 documents are research articles published in journals and periodicals, 7 are academic works (monographs, dissertations, and theses), 2 are e-books, and 2 are papers presented in scientific proceedings; it was also noted that no published academic review articles were found, denoting a complete absence of literature reviews that systematize this theme. More than just a quantitative absence, this result signals an epistemological and formative void: there is a lack of consolidated theoretical frameworks, practical models of school action, and public policies that favor this intersection.

EE in Brazilian schools, despite unquestionable legal support, remains marked by precarious institutionalization, and even with an understanding of its relevance, its daily application remains fragile. The approach tends to be limited to specific actions, such as science fairs or commemorative dates, without promoting continuous and critical reflection, in addition to lacking pedagogical continuity [17].

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The scenario in Ceará also reflects this gap between discourse and reality, where an analysis of municipal policies in elementary education showed that, even with official laws and initiatives, pedagogical actions are sporadic, dependent on the individual will of teachers and without articulation with formal content [18,19].

Studies on practices in secondary education in Ceará indicate that the lack of continuing education, the shortage of adequate teaching materials, and the absence of institutional support are recurring obstacles; and they also confirm that environmental education often appears in a fragmented and decontextualized way, without providing the development of critical, ethical values or environmental citizenship [9, 19].

In some cities, such as Fortaleza, there is an effort to align public policies with sustainable urban practices, however, such initiatives are not yet fully reflected in daily school life [20]. This reveals a misalignment between institutional discourse and effective practice, sustained by failures in teacher training, precarious educational resources, and timid institutional support [18, 19].

In this context, the integration of EE in Brazilian classrooms generally faces persistent obstacles. Although a structured body of regulations exists and teachers are interested in promoting EE, school practice remains incipient, with isolated actions and little permeation by critical or interdisciplinary reflections [17-21].

This weakness points to the criticism that more than regulations are needed: it is necessary to invest in continuing education, appropriate materials, and curricular reorganization so that EE ceases to be a normative banner and becomes an active element in the teaching-learning relationship.

Brazilian legislation on IE shows significant progress. Law n° 13.146/2015, known as the BIL, guarantees "access, participation, equal opportunities and elimination of barriers for students with disabilities" [11]. However, this law alone does not ensure its effectiveness in schools. Teacher training, both at the higher education level (undergraduate) and in daily practice, remains one of the main difficulties in promoting quality inclusion [12, 14].

Felicetti and Batista [12] reveal that undergraduate courses generally address IE only superficially, with few or no specific subjects; also highlighting that many teachers complete their degrees without preparation to deal with diversity in the classroom, compromising the care provided to students with disabilities. In addition, school infrastructure is another major problem. Most schools lack universal access to ramps, adapted restrooms, or assistive technologies, which are basic elements stipulated in the Brazilian law for the inclusion of people with disabilities (BIL).

The absence of Specialized Educational Assistance (SEA) in numerous schools further exacerbates exclusion; moreover, we still have teachers who depend on resources such as sign language interpreters, among other psycho-pedagogical aids, feeling alone in supporting students with special needs. In the integrative review by Lopes *et al*. [22], they emphasize that a significant

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portion of basic education teachers have never participated in specific courses or training in inclusion, which reduces their ability to perform.

In the context of Ceará, Lima, Medeiros, and Lima [14] pointed out that teachers in the municipal network of Tianguá demonstrated great willingness, but the vast majority felt unprepared to implement curricular adaptations and specialized services, highlighting the incompatibility between "inclusive dreams" and actual training.

Records from the National Institute of Educational Studies and Research Anísio Teixeira (IESRA) confirm that, although the number of enrollments of students with disabilities has been growing in recent years in Ceará and in Brazil as a whole, this has not been accompanied by investments in training, resources or adequate curricular adaptations, severely limiting the reach of real inclusion [23].

In short, there is a real gap between inclusive legislation and school dynamics. Despite the recognition of the right to quality education for students with disabilities, chronic problems persist in teacher training and school structure. The articulation between EE and IE constitutes an intersection that is still little investigated and worked on in the daily life of Brazilian schools, although both share commitments to social transformation, equity, and critical citizenship education [19].

The lack of integrated public policies and the absence of interdisciplinary approaches in Political Pedagogical Projects (PPP) reveal much about how this relationship has been treated, both theoretically and practically [24].

While EE proposes training focused on caring for life and sustainability, IE defends the right of all to learning with equity. Both complement each other in the effort to promote a school open to diversities (environmental, social, and human) and capable of generating belonging and participation. However, what is observed is a lack of coordination between the sectors that consider these two areas within the school structure and public policies. There are initiatives that treat inclusion and the environment separately, without establishing relationships between environmental challenges and the human differences present in the school environment [25].

Studies conducted in public schools in the municipality of Alta Floresta – MT have shown that when environmental education practices are adapted to include students with Autism Spectrum Disorder (ASD), the gains are significant in both learning and socialization. Projects such as “Adopt a Spring” and “School Garden” were responsible for developing a sense of responsibility, empathy, and respect for differences, in addition to stimulating motor and cognitive skills in students with disabilities [24].

One of the few studies located in Ceará that addresses this challenge is the study by Lemos *et al*. [26], which analyzed public policies on sustainability and inclusive environmental education (IEE) for deaf students in the municipality of Maranguape. The study revealed that, despite the existence of a municipal regulation that provides for actions in environmental education adapted to

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the deaf public, its application is still very much in its early stages. The use of Libras (Brazilian Sign Language), teacher training, and the production of accessible materials still face structural and institutional obstacles; and the existing initiatives, while commendable, lack continuity or coordination among the responsible sectors.

The case of Maranguape highlights both the advances and the limitations of local actions. There are, for example, projects such as “Sunday in the Park”, the "Environmental Education Program in Schools”, and "Green June”, which touch on the theme of sustainability. However, the integration of these projects with effective inclusive practices, especially those aimed at deaf students, is not yet fully realized, reinforcing the thesis that even where there is political will, there is a lack of planning, training, and monitoring to guarantee equitable access to environmental education for all students [26].

However, we can clearly see that these cases are still the exception, as in most schools professionals face barriers related to pedagogical training, lack of adapted resources, and a lack of clear guidelines that articulate the two fronts. Although national laws, such as Law n° 9.795/1999 and Law n° 13.146/2015, support the right to environmental education and inclusion, the gap between the normative content and its materialization in everyday school practices is still noticeable [26].

Even in school systems with a consolidated structure, environmental education projects are rarely designed to include students with disabilities, and inclusion, in turn, often ignores the potential of the environmental dimension as a cross-cutting formative axis [26]. It is also observed that most actions remain compartmentalized, treating inclusion and the environment as parallel themes [4].

Authors such as Maciel and Santos [25] argue that nature can be an important mediator for the sensory, emotional, and social development of students with ASD. Interaction with the environment promotes self-regulation, autonomy, and a sense of belonging, in addition to generating multisensory experiences that broaden the learning of these students; contact with plants, animals, soil, and the performance of tasks in groups create educational situations that favor not only inclusion but also citizenship and critical environmental awareness.

This approach is reinforced by studies that indicate that the greatest obstacles to building this intersection are not theoretical, but structural and formative. The absence of teacher training that simultaneously addresses EE and inclusive strategies, as well as the scarcity of adapted teaching resources, remain the main obstacles to the consolidation of truly integrative practices [19, 24].

Inclusive environmental education aims to break with exclusionary patterns and promote a broader view of the individual, respecting human and natural diversities; and in this context, the challenge lies not only in including students with disabilities in environmental activities, but also in adapting teaching methodologies, spaces, and resources so that these students participate actively and with protagonism [19, 27].

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This implies recognizing everyone's right to a critical understanding of socio-environmental issues as an essential part of citizenship education. At the same time, Reis [27] warns that this integration is only effective when public policies are reflected in pedagogical planning, ensuring accessibility and real participation. The integration of EE and IE is crucial to promoting a holistic educational environment and requires adequate preparation of teachers, both in their initial and continuing training.

In this sense, thinking about IEE means committing to an accessible, interdisciplinary, and transformative school. It means recognizing the educational potential of nature as a space for coexistence and development for all individuals, including those with disabilities; And above all, it means rethinking the curriculum, pedagogical practice, and teacher training from an integrative perspective that considers the environment and diversity as inseparable dimensions of the educational process.

4. CONCLUSION

The study reveals that, despite legal advancements, the integration between EE and IE is still poorly understood, implemented, and reported in Brazilian schools, especially in Ceará. Teachers face obstacles such as a lack of specific training, a shortage of adapted resources, and a disconnect between public policies. EE and IE, when worked on together, promote a critical and accessible education capable of including all students, including those with specific needs. However, for this integration to be effective, it is essential to invest in teacher training (basic and continuing education), the adaptation of teaching materials, curricular restructuring, school infrastructure, and to foster public policies that articulate these dimensions.

Building a truly inclusive and environmentally conscious education requires a collective commitment involving administrators, teachers, families, and society, aiming at the formation of critical and participatory citizens, because it is from this intersection that we will be able to act in building a sustainable future for all, leaving no one behind.

Given that this research relies on a single search platform and the search for specific descriptors strictly within the titles of publications, it is advisable that future research on this topic focus on results obtained from works indexed on other platforms, published in languages other than Portuguese, and with refined descriptors directed at the textual body of the published works.

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