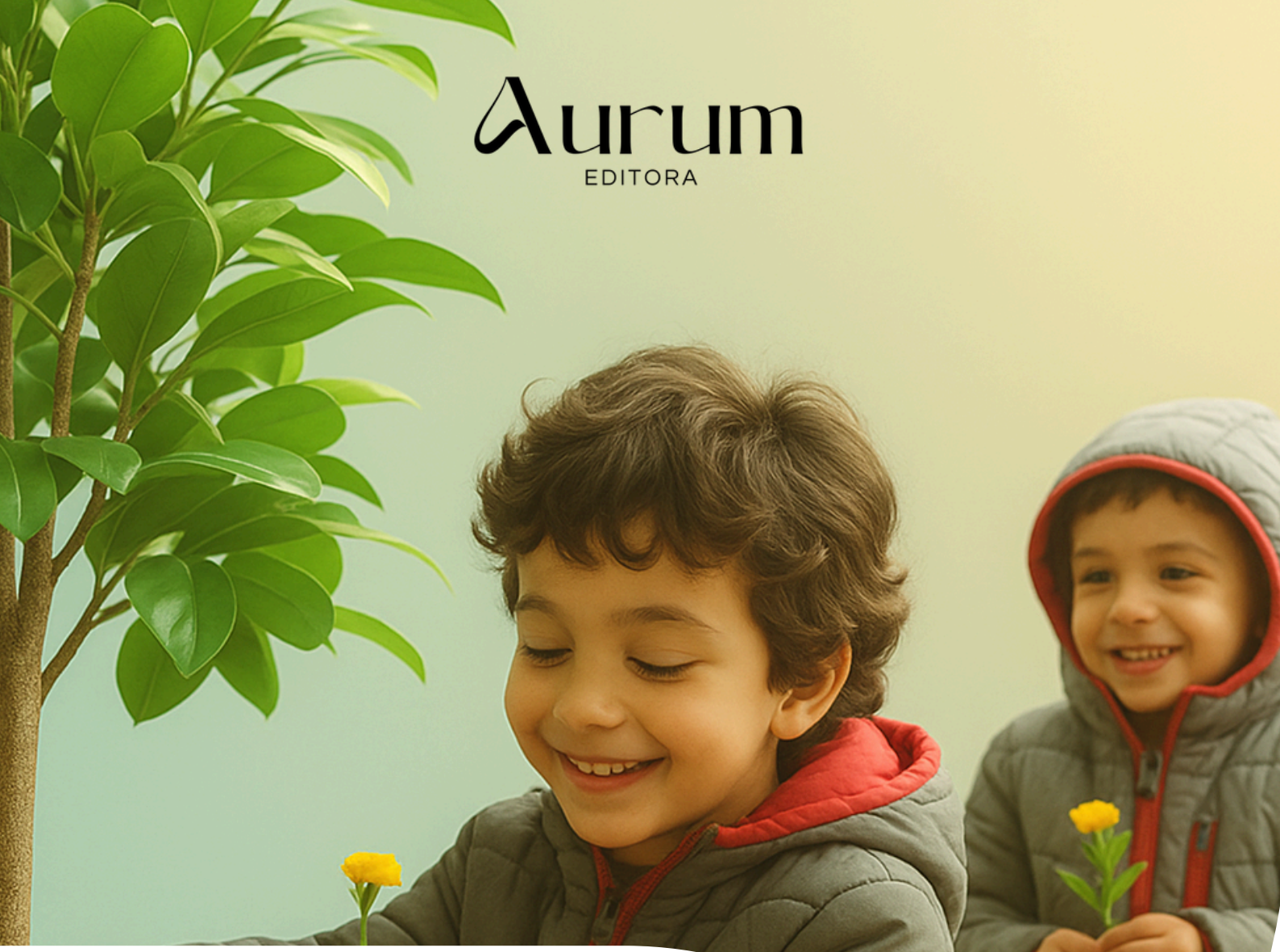
Aurum
EDITORA



# THE IMPORTANCE OF ENVIRONMENTAL EDUCATION IN EARLY CHILDHOOD EDUCATION

ANA CLÁUDIA SIMÕES FÉLIX THOMÉ

Aurum
EDITORA

# THE IMPORTANCE OF ENVIRONMENTAL EDUCATION IN EARLY CHILDHOOD EDUCATION

ANA CLÁUDIA SIMÕES FÉLIX THOMÉ

**AURUM EDITORA LTDA - 2025**
Curitiba – Paraná - Brasil

**EDITOR-IN-CHIEF**
Lucas Gabriel Vieira Ewers

**AUTHOR OF THE BOOK**
Ana Cláudia Simões Félix Thomé

**TEXT EDITING**
Stefanie Vitoria Garcia de Bastos

**ART EDITION**
Aurum Editora Ltda

**COVER IMAGES**
Freepik, Canva.

**LIBRARIAN**
Maria Alice Ferreira

**AREA OF KNOWLEDGE**
Education Sciences



The author is solely responsible for the content, accuracy, and veracity of the data presented in this text, which does not necessarily reflect the official position of the Publisher. The work may be downloaded and shared, provided that credit is given to the author, but modification of the content in any way or its use for commercial purposes is not permitted.

All manuscripts underwent a blind peer review by members of the Editorial Board and were approved for publication based on criteria of impartiality and academic objectivity.

Aurum Editora is committed to maintaining editorial integrity at all stages of the publication process, preventing plagiarism, fraudulent data or results, and ensuring that financial interests do not affect the ethical standards of the publication. Any suspicion of scientific misconduct will be investigated with attention to ethical and academic principles.

**International Cataloguing in Publication (CIP) Data (Brazilian Book Chamber, São Paulo, Brazil)**

Thomé, Ana Cláudia Simões Félix
The importance of environmental education in early childhood education [e-book] : i / Ana Cláudia Simões Félix Thomé ; [tradução Daniel Rodrigues da Silva]. -- 1. ed. -- Curitiba, PR : Aurum Editora, 2025.
PDF

Original title: The importance of environmental education in early childhood education
ISBN 978-65-83849-31-1

1. Cognitive development 2. Environmental education 3. Environment (Early childhood education) 4. Educational transformation I. Title.

25-317838.0 CDD-372.21

**Indexes for systematic catalog:**

1. Environment: Early childhood education 372.21

Maria Alice Ferreira - Librarian - CRB-8/7964

**DOI:** 10.63330/livroautoral192025-

**Aurum Editora Ltda**
CNPJ: 589029480001-12
contato@aurumeditora.com
(41) 98792-9544
Curitiba - Paraná

## AUTHOR

**Ana Cláudia Simões Félix Thomé**
PhD in Education from Estácio University Center in Brasília (2025), Honorary Doctorate in Christian Pedagogy from Peniel Theological Seminary, and Master's Degree in Education from Estácio University Center in Brasília (2020). She holds a degree in Portuguese Language and Literature from the Catholic University of Brasília (2006), a Bachelor's degree in Law from the Faculty of Palmas (2017), and a Bachelor's degree in Theology for ecclesiastical purposes from the Peniel Theological Seminary (2025). He works in the field of Language Arts, with an emphasis on interdisciplinary pedagogical practices, child development, autism spectrum disorder, inclusive education, and multidisciplinary teamwork.
Lattes: http://lattes.cnpq.br/7677623660541772

**ABSTRACT**

This study addressed the importance of environmental education in early childhood education, emphasizing its relevance to the integral development of children and to the construction of sustainable awareness from the first years of life. The main objective was to analyze how the inclusion of environmental education in early childhood education contributed to children's cognitive, affective, and social development, while also promoting attitudes of care, respect, and responsibility toward the environment. The research was qualitative and bibliographic in nature, based on authors and official documents dealing with public policies and pedagogical practices related to environmental education, such as Law No. 9.795/1999, the National Education Guidelines and Framework Law (LDB No. 9.394/1996), and the National Common Curricular Base (BNCC, 2018). The work was organized into five chapters: the first presented the historical and conceptual foundations of environmental education; the second discussed early childhood education and its contemporary challenges; the third examined the practical application of environmental education at this level of schooling; the fourth analyzed the impacts and benefits of environmental practices on child development; and the fifth outlined challenges and future perspectives for consolidating this pedagogical approach. The results indicated that environmental education from early childhood fostered the development of ethical values, the expansion of ecological awareness, and the strengthening of children's affective and social relationships. It was also found that the success of environmental education in early childhood depended on adequate teacher training, institutional support, and the appreciation of playful and interdisciplinary methodologies. It was concluded that environmental education in early childhood represented an essential instrument for building a culture of sustainability capable of transforming behaviors and promoting more harmonious coexistence between human beings and the environment, reaffirming the school as a space for citizenship education and commitment to the planet's future.

**Keywords:** Environmental education; Early childhood education; Sustainability; Value formation; Citizenship.

## DEDICATION

I dedicate this work with great affection to my family and friends, who have always stood by my side during moments of challenge and achievement. Every word of encouragement, gesture of love, and demonstration of trust was like a breath of hope, renewing my strength and driving me forward, even when the path seemed difficult. Without your support and care, this victory would not shine as brightly. It is ours. Thank you for believing in me and for being part of this journey.

## ACKNOWLEDGMENTS

First and foremost, I thank God, an inexhaustible source of strength, wisdom, and courage. His constant presence illuminated every step of this journey, guiding me with love and purpose. Without His blessing, none of this would have been possible.

To my sister-in-law, Rosangela Thomé, my deepest gratitude. Your generous support, constant encouragement, and sincere affection were fundamental pillars in this endeavor. Your presence was a light in challenging moments and a joy in times of achievement.

I extend my thanks to all who, directly or indirectly, contributed to making this dream a reality. Every gesture, word, and encouragement left valuable marks on my heart. To all of you, my sincere and eternal gratitude.

**SUMMARY**

The contemporary environmental crisis represents one of the greatest challenges faced by humanity in the 21st century. The accelerated growth of cities, the excessive consumption of natural resources, the increase in pollution, and the improper disposal of waste have become global problems that directly affect the quality of life on the planet. Since the Industrial Revolution, which began in the 18th century, the relationship between humans and nature has undergone profound transformations, based on an economic development model that prioritized profit and the unlimited exploitation of natural resources to the detriment of sustainability (Carson, 1962; Brimblecombe, 2006; Reigota, 2017). This logic, centered on the idea of technical progress and continuous growth, resulted in ecological imbalances, environmental degradation, and social inequalities, demanding a new way of thinking about development and education.

With the advent of major environmental catastrophes in the 20th century—such as the toxic smog in London in 1952 and the Minamata disaster in 1956—humanity began to perceive the collateral effects of uncontrolled industrialization on the environment and public health. These events spurred the creation of environmental laws and the emergence of social movements in defense of nature. In the international context, documents such as the Brundtland Report (1987) and Agenda 21, drafted at the United Nations Conference on Environment and Development (Eco-92), consolidated the concept of sustainable development as one that meets present needs without compromising future generations (UN, 1987; 1992). In this sense, Environmental Education came to be recognized as an essential instrument for social transformation and for promoting a culture of sustainability.

Environmental Education (EE), as defined by the National Environmental Education Policy (Law No. 9.795/1999), constitutes a permanent process in which individuals and society build values, knowledge, skills, and attitudes aimed at conserving the environment and improving quality of life. From the 1970s onward, especially after the Stockholm Conference (1972) and the Intergovernmental Conference in Tbilisi (1977), environmental education began to integrate educational policies in various countries, becoming a fundamental axis in discussions on citizenship and sustainability (UNESCO, 1978). In Brazil, the institutionalization of EE occurred gradually, accompanying the maturation of environmental and educational policies, culminating in the inclusion of the transversal theme "Environment" in the National Curriculum Parameters (PCNs) and later in the National Common Curricular Base (BNCC, 2018), which reinforces the importance of integral and sustainable education from the earliest years of life.

Contextualizing Environmental Education within Early Childhood Education requires understanding the role of this stage in shaping values and attitudes. Childhood is the period during which the cognitive, affective, and social foundations of personality are built. According to Vygotsky (1998), child development occurs through social interaction and symbolic mediation with the environment,

making the school a privileged space for awakening ecological awareness and a sense of belonging to nature. In the same perspective, Wallon (1941) and Piaget (1978) emphasize that learning in childhood is marked by curiosity, experimentation, and affectivity, with direct contact with nature being essential for developing attitudes of care, solidarity, and respect.

Environmental Education, when approached playfully and interdisciplinarily in childhood, becomes a powerful tool for forming conscious and critical citizens. Loureiro (2004) argues that EE should be understood as a political and transformative process, capable of integrating science, ethics, and sensitivity. Similarly, Gadotti (2000) conceives Environmental Education as education for sustainability, guided by solidarity between generations and respect for the diversity of life. Reigota (2009) complements this view by affirming that EE should not be restricted to teaching ecology but must promote dialogue between scientific and popular knowledge, involving the entire school community.

However, the effective application of Environmental Education in Early Childhood Education still faces significant challenges. Many educational institutions address the theme in a punctual manner, limiting it to commemorative activities such as "Tree Day" or "Environment Day," without integrating it into the school's political-pedagogical project. Furthermore, teacher training focused on sustainability remains insufficient, compromising the depth and continuity of educational actions (Oliveira & Carvalho, 2020; Freitas & Ramos, 2018). Added to this is the lack of adequate spaces for contact with nature, especially in urban contexts where concrete and technology prevail over greenery. Thus, there is a need to rethink curricula and methodologies so that Environmental Education is experienced as part of everyday school life and not merely as an isolated content.

Within this scenario, this study focuses on "The Importance of Environmental Education in Early Childhood Education," seeking to understand how this practice contributes to the integral development of the child and to the formation of sustainable attitudes and values. The research problem guiding the study can be formulated as follows: In what ways can Environmental Education, integrated into the pedagogical practices of Early Childhood Education, promote children's cognitive, affective, and social development, fostering the construction of a critical and participatory ecological awareness?

The research is based on the hypothesis that the systematic inclusion of Environmental Education in Early Childhood Education, when conducted through playful, interdisciplinary, and affective practices, contributes not only to learning about the environment but also to the formation of ethical values, solidarity, and citizenship. It is expected to demonstrate that Environmental Education, when addressed from the earliest years of life, broadens the child's perception of the world and stimulates a sense of collective responsibility, making the child an agent of transformation in their reality.

General Objective:

- Analyze the importance of Environmental Education in Early Childhood Education as a tool

for integral development and the construction of sustainable values.

- Specific Objectives:

  1. Understand the historical and conceptual trajectory of Environmental Education and its interfaces with sustainable development;
  2. Identify the pedagogical relevance of Early Childhood Education as a space for forming environmental attitudes and values;
  3. Investigate pedagogical practices that integrate Environmental Education into everyday school life;
  4. Highlight cognitive, affective, and social benefits and impacts of Environmental Education on child development;
  5. Discuss challenges and future perspectives for the effective implementation of Environmental Education in Early Childhood Education.

The justification for this work lies in the urgency of rethinking education in the face of the global environmental crisis and the need to build more just and balanced societies. Educating for the environment is educating for life, and this process must begin early, when children learn to observe, care for, and interact with the world around them. Environmental education in childhood stimulates a sense of belonging, awakens scientific curiosity, develops empathy, and forms individuals capable of reflecting on their actions and consequences. Thus, investing in Environmental Education in Early Childhood Education means investing in a sustainable future and in transforming mentalities and behaviors.

From a methodological standpoint, this study is qualitative and bibliographic in nature, based on a review of national and international literature. Theoretical references include authors such as Carvalho (2008; 2012), Loureiro (2004), Reigota (2009; 2017), Gadotti (2000), Faria (1999; 2007), Zabalza (1998), and official documents such as the LDB (Law No. 9.394/1996), the National Environmental Education Policy (Law No. 9.795/1999), the National Curriculum Guidelines for Early Childhood Education (2010), and the BNCC (2018). The research is structured as a theoretical analysis organized into five complementary chapters that interconnect to build a comprehensive view of the theme.

Chapter 1 – Foundations of Environmental Education presents the historical and conceptual trajectory of environmental education, from early ecological discussions to the formulation of public policies and legal instruments for environmental protection. It shows how international conferences and UN reports influenced the formation of global awareness about sustainability, contextualizing the emergence of Environmental Education and its relationship with Education for Sustainable Development.

Chapter 2 – Early Childhood Education: Concepts and Challenges analyzes the historical evolution of childhood and Early Childhood Education, highlighting the role of schools in forming critical and conscious citizens. It addresses the transition from an “assistentialist” view to an integral educational

approach that combines care, affection, and knowledge, according to authors such as Ariès (1978), Faria (2007), and Zabalza (1998).

Chapter 3 – Environmental Education Applied to Early Childhood Education constitutes the core of the study, discussing pedagogical practices and methodologies that make it possible to work on sustainability with young children. Experiences involving play, contact with nature, affectivity, and interdisciplinarity are explored as instruments for learning and ethical-emotional development.

Chapter 4 – Impacts and Benefits presents research results demonstrating the positive effects of Environmental Education on children's cognitive, affective, and social development, based on empirical evidence from authors such as Ardoin et al. (2020), Prins et al. (2022), and Davis et al. (2023). It also discusses the role of environmental education in strengthening the bond between school, family, and community.

Chapter 5 – Challenges and Future Perspectives addresses obstacles to implementing Environmental Education in Early Childhood Education, such as lack of infrastructure and adequate teacher training, and proposes innovative paths such as the use of digital technologies, active methodologies, and institutional partnerships.

Finally, the Final Considerations synthesize the results and reinforce the idea that Environmental Education is an indispensable path for social transformation and for building a new ethic of coexistence between humans and nature. Educating environmentally from childhood means planting the seeds of respect, empathy, and care—values essential for the maintenance of life and planetary sustainability.

The increase in the consumption of natural resources and the growing generation of waste resulting from the Industrial Revolution, which began in the mid-18th century, already sparked social concern in the 19th century regarding the impacts of urbanization and industrialization on the environment. The relationship between humans and nature began to be widely discussed in works such as Evidence as to Man's Place in Nature by Thomas Huxley (1863) and Man and Nature: Or, Physical Geography as Modified by Human Action by George Perkins Marsh (1864), which warned against the excessive exploitation of natural resources. During this period, in 1872, Yellowstone National Park was created in the United States, considered the first biodiversity conservation unit (Jackson, 1942).

The negative effects of industrialization became more evident in the 20th century with episodes of severe environmental pollution. In 1952, London was the stage for the Great Smog, caused by high concentrations of smoke and soot from industrial activities, resulting in thousands of deaths and becoming known as the first major modern environmental catastrophe (Greater London Authority, 2002). A few years later, in 1956, the Minamata disaster in Japan claimed hundreds of lives due to mercury contamination in the bay's waters by local industry, affecting the entire food chain (George, 2002). The London disaster led to legal advances such as the Clean Air Act, enacted in 1956 by the British Parliament, which established measures to control air pollution and restricted coal burning in urban areas (Brimblecombe, 2006).

Inspired by these actions, other countries created laws and institutions aimed at environmental protection. In Brazil, Decree No. 50.079 of 1968 established the Basic Sanitation Technology Center of São Paulo – CETESB, now the Environmental Company of the State of São Paulo, responsible for controlling and monitoring polluting activities. Over the years, CETESB became an international reference and joined United Nations and World Health Organization networks focused on sanitation and sustainable development (CETESB, 2022). Meanwhile, new environmental issues gained global attention, such as pesticide contamination denounced by Rachel Carson in Silent Spring (1962), where the author criticized the indiscriminate use of DDT and its impacts on ecosystems and humans, leading to the suspension of the product in the United States and the creation of the Environmental Protection Agency (EPA) (Carson, 1962; Griswold, 2012).

In Brazil, the environmental debate was reflected in the enactment of Law No. 4.771/65, which revised the 1934 Forest Code in response to intensified agricultural mechanization and the need to regulate forest exploitation (Brasil, 1965). In 1968, the Club of Rome was founded, composed of scientists, politicians, and business leaders who debated the limits of economic growth. The report The Limits to Growth (1972), prepared by MIT researchers, projected a future of resource scarcity if global consumption was not curbed (Meadows et al., 1972). Although influential, the report also received

criticism, particularly from Latin American intellectuals, who interpreted it as an attempt to restrict the development of poor countries (Reigota, 2017).

In 1972, the first United Nations Conference on the Human Environment was held in Stockholm, producing 26 principles and 109 recommendations to guide environmental actions, including the creation of the International Environmental Education Program (UN, 1973). That same year, the United Nations Environment Programme (UNEP) was founded in Kenya, with the mission of promoting environmental conservation and the sustainable use of natural resources (UNEP, 2022). Meanwhile, Brazil, still under military rule and driven by the "economic miracle," adopted development policies that neglected environmental issues, allowing polluting projects such as large hydroelectric plants and mining operations, in contrast to the sustainability ideals discussed internationally (Duarte, 2015; Prado & Estevam, 2015; Reigota, 2017).

Even in this context, the country created the Special Secretariat for the Environment (SEMA) in 1973, its first environmental management body, responsible for formulating policies and programs aimed at ecological preservation (Brasil, 1973). Following the recommendations of the Stockholm Conference, UNESCO organized in 1975, in Belgrade, the first International Seminar on Environmental Education, which resulted in the Belgrade Charter, a document outlining global guidelines for environmental education (UNESCO, 1977). Two years later, in 1977, UNESCO and UNEP held in Tbilisi, in the former Soviet Union, the first Intergovernmental Conference on Environmental Education, which consolidated principles and objectives to promote ecological awareness at all educational levels (UNESCO, 1978).

These debates influenced Brazil to establish the National Environmental Policy (Law 6.938/81), which created CONAMA and introduced instruments such as the Environmental Impact Study (EIA) and the Environmental Impact Report (RIMA), essential for preventing and mitigating environmental damage (Brasil, 1981). In 1983, the UN created the World Commission on Environment and Development, chaired by Gro Harlem Brundtland, which published in 1987 the report Our Common Future, where the concept of sustainable development was coined—development that meets present needs without compromising future generations (UN, 1987). The document defined sustainable development as a process based on economic, social, and environmental balance, combining growth and conservation.

In the same year, UNESCO and UNEP held the International Congress on Environmental Education and Training in Moscow, reinforcing the role of education as an essential instrument for sustainability (UNESCO, 1988). Shortly thereafter, the 1988 Federal Constitution consolidated the right of all to an ecologically balanced environment and mandated that public authorities promote environmental education at all levels of education (Brasil, 1988). The creation of the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA) in 1989 strengthened environmental management in the country (Brasil, 1989).

In 1992, Rio de Janeiro hosted the United Nations Conference on Environment and Development (Eco-92), an event that brought together representatives from 179 countries and resulted in key documents such as Agenda 21, which proposed guidelines for global sustainable development, and conventions on biodiversity and climate change (UN, 1992a; 1992b; 1992c; 1993).

In the following years, Brazil advanced in the institutionalization of environmental education with the creation of the National Environmental Education Program (PRONEA) in 1994 and, later, with the enactment of Law No. 9.795/99, which established the National Environmental Education Policy (PNEA), consolidating sustainability principles in educational and environmental legislation (MEC, 2005; Brasil, 1999). These milestones consolidated a long historical trajectory in which environmental thought evolved from a punctual concern with pollution to a systemic and integrative vision that recognizes the interdependence between environment, economy, and society.

## CONCEPT OF EDUCATION FOR SUSTAINABLE DEVELOPMENT

The concept of Education for Sustainable Development (ESD) emerged with the same optimism that marked the formulation of the concept of sustainable development (SD) in the 1980s. However, this idea has faced skepticism among critics and educational researchers, fueling debates about the relationship between ESD and other educational approaches (Freitas, 2004).

Some authors, such as Gutiérrez, Benayas, and Calvo (2006), attribute to Eco-92 the moment when education began to be recognized as an instrument for promoting sustainability, introducing the concepts of Human Development and Sustainable Human Development. The document resulting from this event presents education as a fundamental tool for constructing and inventing new realities.

These authors define the Decade of Education for Sustainable Development (DESD) as a period aimed at fostering a solidarity-based education capable of providing an accurate perception of the state of the world, encouraging responsible attitudes and commitments, and preparing citizens for conscious decision-making, with the goal of achieving culturally plural development, social justice, and smarter models of interaction with ecosystems (Gutiérrez, Benayas & Calvo, 2006, p. 26).

As these authors emphasize, this shift in educational models requires diverse actions and instruments that promote changes in attitudes and lifestyles. However, from a less optimistic perspective, Santana and Lima (2009), drawing on Fino (2001), argue that the educational proposals within the Decade of Education for Sustainable Development remain conditioned by short-term interests and capital demands, rather than addressing future needs or fostering profound social change.

Similarly, Löwy (2014) questions the legitimacy of ESD, asserting that the interest behind the Decade of Education for Sustainable Development was an attempt to align society with the hegemonic logic of capitalism. This proposal, which seeks an education guided by sustainable development and a

global framework for society, is controversial, especially in the United States, where ESD is widely discussed, with numerous studies published in international journals on the subject (González Gaudiano, 2006; Hart & Nolan, 2008; Hedefalk, Almqvist & Östman, 2014).

According to Hedefalk, Almqvist, and Östman (2014), who conducted studies in early childhood education based on the work of Scott and Gough (2004), ESD's main objective is to teach students to act critically. Their research identified two distinct definitions of ESD: one as a triple approach considering education about, in, and for the environment; and another as an approach encompassing three interrelated dimensions—economic, social, and environmental (Hedefalk, Almqvist & Östman, 2014).

The first definition, which views ESD as education about, in, and for the environment, is less common and does not correspond to the official UN definition. Nevertheless, many researchers address the topic from this perspective. According to these authors, education about the environment emphasizes knowledge of natural systems, such as water cycles and ecosystems; education in the environment values direct experiences in nature; and education for the environment encourages active participation in solving environmental problems, seeking socially just and sustainable choices. These three dimensions should be understood in an integrated manner so that individuals learn about and within the environment and are capable of acting on its behalf (Hedefalk, Almqvist & Östman, 2014).

The second definition of ESD follows the proposal of the three pillars of sustainable development, known as the Triple Bottom Line, which encompasses the balance between economic viability, social justice, and ecological integrity (Elkington, 1994; Boff, 2012; Sartori, Latrônico & Campos, 2014). This definition is the most widely adopted and frequently appears in official documents. According to Hedefalk, Almqvist, and Östman (2014), ESD, from this perspective, incorporates economic, social, and environmental dimensions, emphasizing ecosystem protection, the promotion of justice and social equality, and financial sustainability. These dimensions reflect the interconnections among economic development, environmental protection, and social justice, illustrating how lifestyles, nature, and society are intertwined.

The major difference between these definitions is that the first is almost exclusively focused on preserving the natural environment, while the second also includes social and economic aspects. Hedefalk, Almqvist, and Östman further note that the first, more restrictive definition views environmental education as a field based on scientific data, with less emphasis on ethical judgments related to sustainability, assuming that science provides the correct answers for actions to be taken.

Conversely, the definition of ESD that most emphasizes emancipation and critical thinking is the one that encompasses the three pillars of sustainable development, which is the most widely accepted and disseminated internationally, especially in Europe and the United States. From this perspective, the

central objective of ESD is to teach students to act critically (Scott & Gough, 2004, apud Hedefalk, Almqvist & Östman, 2014).

González-Gaudiano (2006), based on works discussing the controversial proposal of sustainable development and ESD, indicates that many authors view ESD as an evolution of environmental education that can significantly contribute to solving contemporary problems, elevating the educational process beyond the limitations of traditional environmental education.

Sauvé (1997) and Lima (2003) reinforce that ESD emerged to overcome the environmental education practiced in European countries and the United States, where the latter was increasingly seen as insufficient to address the environmental crisis due to its reductionist approach, focused exclusively on ecological aspects and neglecting socio-historical and political dimensions. In Brazil, ESD is often interpreted in a depoliticized manner, while in Europe and the United States, environmental education is viewed more naturalistically and biologically (Lima, 2003; Freitas, 2004; González-Gaudiano, 2006).

The prevailing view in these developed countries maintains the initial optimism of environmental education, aligned with the concept of sustainable development. In Latin America, however, the ESD proposal is received with greater caution by educators and researchers, and many criticisms of ESD originate from this region (González-Gaudiano, 2006). Despite this, Latin America is also the birthplace of a pedagogical proposal that adopts ESD principles, known as Ecopedagogy or Earth Pedagogy, disseminated mainly through the works of Costa Rican educator Gutiérrez and Brazilian scholar Moacir Gadotti.

Pedagogical work involving the Sustainable Development Goals (SDGs) has been developed globally within the ESD perspective, a concept that emerged from the need to address growing environmental challenges. Formulated in 2005, ESD can be understood as an education that encourages critical thinking, enabling individuals to identify unsustainable elements in their lives and societies and to promote positive social and environmental changes.

The launch of the United Nations Decade of Education for Sustainable Development (2005–2014) initiated a global movement to reorient education toward the challenges of sustainable development. UNESCO coordinates the Global Action Programme on ESD (2014–2030), created to implement and monitor the actions of the decade, seeking to ensure the inclusion of ESD principles in formal, non-formal, and informal education, encompassing key issues of sustainable development in teaching and learning.

The pursuit of sustainable development requires a broad shift in mindsets, attitudes, and behaviors. According to the Incheon Declaration (UNESCO, 2015), ESD develops skills, values, and attitudes that enable citizens to live healthy and fulfilling lives, make informed decisions, and respond to local and global challenges. Thus, ESD is considered part of quality education and lifelong learning, directly related

to SDG 4 and indirectly to other goals, as it promotes behavioral transformation, participation in collective processes, and engagement in social, economic, and political changes toward sustainability (UNESCO, 2013).

## THE RELATIONSHIP BETWEEN EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD) AND ENVIRONMENTAL EDUCATION (EE)

The relationship between Education for Sustainable Development (ESD) and Environmental Education (EE) is an increasingly relevant topic in the contemporary context, especially in light of the environmental, social, and economic challenges facing the world. Although these two concepts are closely related and sometimes treated as synonyms, it is important to understand their specificities and intersections, as well as how they complement each other in promoting the social and cultural transformations necessary for planetary sustainability.

Environmental Education (EE) has its roots in the environmentalist movement of the 20th century, particularly after the Stockholm Conference in 1972, when global concern about environmental problems gained greater international visibility. EE is understood as an educational process aimed at developing environmental awareness, seeking to sensitize individuals to the impacts of human actions on ecosystems, promote respect for nature, and encourage attitudes that minimize environmental damage. Its main focus is the preservation of the environment, the conservation of natural resources, and the understanding of ecological processes that sustain life. According to UNESCO (1978), EE should contribute to the development of active citizenship that recognizes the importance of balancing human needs with the conservation of natural resources for future generations.

On the other hand, Education for Sustainable Development (ESD) emerged in a more recent context, expanding the scope of EE by integrating social, economic, and cultural dimensions into the sustainability debate. ESD was consolidated internationally at the World Conference on Education for Sustainable Development, held in Johannesburg in 2002, and reinforced by the United Nations Decade of Education for Sustainable Development (2005–2014). The concept of ESD is not limited to environmental issues but encompasses the formation of critical, conscious citizens committed to transforming their realities, promoting integral human development, social justice, economic equity, and respect for human rights. According to Sterling (2004), ESD represents a holistic and transdisciplinary educational approach that seeks to promote a dynamic balance between present and future needs, based on sustainability principles.

Thus, ESD can be seen as an evolution of EE, broadening its reach to include not only environmental preservation but also the social and economic aspects that sustain communities and societies. This expansion implies a more complex view of contemporary challenges, recognizing that

environmental issues, such as ecosystem degradation, are intrinsically linked to social problems such as poverty, inequality, and social exclusion. According to Filho et al. (2018), ESD seeks to promote development that meets present needs without compromising the ability of future generations to meet their own, as defined in the Brundtland Report (1987).

Moreover, the interrelationship between EE and ESD is evident in their methodologies and educational objectives. EE traditionally emphasizes knowledge about natural processes and the impacts of human actions on the environment, promoting awareness and behavioral changes regarding environmental conservation. ESD incorporates these actions and adds the development of critical, participatory, and proactive skills that enable individuals to act as agents of change in their communities, adopting sustainable practices in all spheres of life. In this way, ESD expands the scope of EE by engaging the ethical, political, and cultural dimensions of education, fostering an integrated and systemic view of the world.

In formal education, this relationship is reflected in how school curricula have incorporated environmental and sustainability themes. Environmental education is often treated as a specific subject or curricular component focused on teaching scientific aspects related to the environment. ESD, however, seeks to make these contents transversal, integrating them into other areas of knowledge and promoting interdisciplinary projects that encourage critical thinking, social participation, and the collective construction of solutions to socio-environmental problems. According to Loureiro (2015), the inclusion of ESD in schools enables a more contextualized education that connects academic knowledge to local and everyday practices, contributing to the formation of conscious and responsible citizens.

Beyond the school setting, ESD and EE also intersect in public policies, community projects, and non-governmental initiatives aimed at promoting sustainability through education. In all these spaces, EE provides the foundation for understanding natural systems and the impacts of human activities, while ESD expands this knowledge to include critical analysis of social, economic, and cultural structures that influence environmental decisions. This integration is essential for addressing complex challenges such as climate change, biodiversity loss, and social inequality, which require multidimensional and collective responses.

It is important to highlight that ESD also involves promoting values and attitudes that foster environmental ethics, solidarity, respect for cultural diversity, and commitment to social justice. In this sense, ESD encourages active engagement in processes of social transformation, promoting participation in decisions that affect the environment and society. This perspective aligns with the ideas of Souza and Rodrigues (2017), who emphasize the need for education that forms critical and active citizens capable of contributing to the construction of sustainable societies.

Another relevant point in the relationship between EE and ESD is the interdisciplinary and transdisciplinary nature required by both approaches. Socio-environmental problems are complex and demand knowledge that goes beyond traditional disciplinary boundaries. Therefore, both EE and ESD propose methodologies that encourage the articulation of natural, social, and human sciences, promoting the integration of scientific knowledge with local, traditional, and cultural knowledge. This integration contributes to building more contextualized knowledge and valuing diverse perspectives, which is essential for formulating sustainable and fair solutions.

Furthermore, the affective and emotional dimension is a common and fundamental aspect of both EE and ESD. Sensitization and the development of emotional bonds with nature are considered essential for forming responsible and committed attitudes toward sustainability. Building a critical environmental awareness is related not only to rational knowledge but also to valuing aesthetic, cultural, and emotional aspects linked to the environment. According to Capra (2002), this emotional connection fosters the development of an ecological ethic that recognizes the interdependence between human beings and natural systems.

In this context, environmental education, by working on sensitization and awareness, prepares the ground for education for sustainable development to go beyond the individual, stimulating collective protagonism and citizen participation. ESD, therefore, proposes an education that not only informs but also mobilizes and empowers individuals for transformative action, considering local, regional, and global dimensions.

In summary, Environmental Education and Education for Sustainable Development are deeply interconnected, with the former providing a necessary foundation for the advancement of the latter. EE offers the scientific basis and sensitization needed for individuals to understand the importance of environmental conservation. ESD expands this understanding by incorporating social, economic, cultural, and political dimensions of sustainability, promoting the formation of critical, participatory citizens committed to building a sustainable future. This relationship is fundamental for implementing educational practices that address the environmental and social challenges of the 21st century, contributing to the construction of more just, equitable societies in harmony with the environment.

The concept of childhood, as we understand it today, did not exist in earlier times and was not perceived as a natural or inherent condition of human experience. According to Philippe Ariès (1978), this new way of viewing the child began to take shape only at the end of the Middle Ages, when children were previously seen as "miniature adults," beings merely waiting to reach adult size and physical maturity. The author notes that, in the first manifestations of this new perspective, an attitude of indulgence prevailed: the child was perceived as innocent, graceful, and amusing, serving as a source of entertainment for adults. This "pampering," widely criticized by educators of the time, was expressed not only in gestures of affection but also in reactions of grief at the death of a child, which ceased to be seen as inevitable and became a cause of profound suffering.

With the rise of moral and religious ideas in the 17th century, childhood began to be understood from a more ethical and psychological perspective. Ariès (1978) explains that criticism of indulgence led to the understanding that it was necessary to know the child and correct its imperfections, rather than merely pampering it. During the Modern Era, between the 16th and 19th centuries, schools—although initially not distinguishing students by age—began to emphasize discipline and moral control, both of religious origin and deeply rigid. This approach helped shape the behavior of children and young people, directing them toward socially accepted standards of conduct. However, this phenomenon was not universal: while some young people experienced a school-based childhood, others were forced to become adults prematurely, often without the physical or emotional conditions to do so.

Still, according to Ariès (1978), the utopia of universal education was rejected by most educators of the 18th century, who advocated differentiated education according to social status, reflecting the traditional separation between manual and intellectual labor—two worlds that rarely intersected. The advance of capitalism and the increasing use of child labor in factories deepened this social divide. The notion of family, as we know it today, was also not a reality in the Middle Ages. Ariès emphasizes that the idea of a private family emerged between the 15th and 16th centuries; before that, family life was public, and intimacy was practically nonexistent.

With the advent of capitalism and urbanization, the first institutions dedicated to caring for young children emerged. According to Sanches (2004), the concept of daycare originated in Europe at the end of the 18th and beginning of the 19th centuries, with the function of caring for children from zero to three years old while their parents worked. In Brazil, daycare centers appeared at the end of the 19th century, accompanying the process of industrialization and migration to urban centers. The growth of cities in the most developed regions intensified social problems, aggravating unemployment and underemployment. Faced with this, doctors, jurists, church representatives, and members of civil society joined forces with the State to create assistance plans aimed at the poorest populations. As Sanches (2004) analyzes,

philanthropy emerged as a strategy for social control and maintaining the capitalist system, seeking to reduce costs and ensure the reproduction of the workforce.

In this context, industrialists and charitable institutions began building workers' villages near factories, equipped with schools, daycare centers, and sports clubs. The idea was that by taking good care of workers' children, they would feel more satisfied and, consequently, more productive (Sanches, 2004). Only with the National Education Guidelines and Framework Law (Law No. 9.394/96) did the child come to be recognized as a subject of rights, no longer as an object of guardianship. This law was a milestone in Brazilian educational history, as it guaranteed Early Childhood Education as a right for children aged 0 to 6 years and as a duty of the State, recognizing daycare centers and preschools as part of Basic Education rather than as welfare institutions.

Campos, Rosemberg, and Ferreira (1995) observe that linking daycare centers and preschools to the field of Education represented a significant advance over the previously predominant welfare-based approach, by integrating care and education as complementary and inseparable dimensions of child development. The 1988 Federal Constitution had already guaranteed education for young children as a citizen's right and a duty of the State, recognizing shared responsibility among family, society, and public authorities. Faria (2007) reinforces that although Early Childhood Education has existed in Brazil for over a century, it was only in the 1990s that it was recognized as a child's right and the first stage of Basic Education.

With the LDB of 1996, pedagogical work with children aged 0 to 6 years gained expanded educational and social value, as Machado (2005) highlights, by addressing the integral development of children and promoting citizenship from the earliest years of life. The National Plan for Early Childhood Education (PNEI, 2006) and the Ministry of Education organized seminars and meetings with state and municipal managers to define guidelines, goals, and strategies aimed at expanding enrollment and improving the quality of services in Early Childhood Education institutions. The preparation of the document involved various social actors, reaffirming the democratic commitment to formulating public policies (MEC, 2005).

Despite these advances, integrating daycare centers and preschools into the educational system was not accompanied, on a national scale, by adequate allocation of financial resources. Although Early Childhood Education is not mandatory, enrollment numbers have steadily increased—between 2001 and 2003, average growth rates were 6.4% in daycare centers and 3.5% in preschools (MEC, 2005). The Ministry of Education emphasizes that discussing the quality of Early Childhood Education implies revisiting conceptions of childhood, pedagogy, and citizenship, as well as considering recent research and current legislation to improve educational practices and policies.

For Faria (1999), the child is not an abstraction but a historical and cultural being who produces and is produced by the environment in which they live. The author criticizes outdated conceptions that viewed the child as incomplete or empty and advocates for a pedagogy that recognizes their capacity to act, think, and transform the world. Tiriba (2005) adds that the quality of Early Childhood Education depends on pedagogical practices sensitive to children's needs and expressions, requiring attentive professionals capable of interpreting desires, observing behaviors, and organizing the educational environment intentionally and affectively.

In the same vein, Zabalza (1998) defines three essential purposes for quality Early Childhood Education: a child-centered school that values identity and culture; a school of experiences and knowledge, focused on meaningful learning; and a participatory school integrated with the community. For the author, autonomy, identity, and competence are inseparable pillars of child development: autonomy relates to the ability to act and interact; identity to self-recognition and self-confidence; and competence to the appropriation of cultural symbols and values. Educational quality, therefore, depends not only on curriculum and teaching practices but also on institutional functioning, collective goals, and continuous commitment to improving services offered to children (Zabalza, 1998).

Thus, the historical and pedagogical construction of Early Childhood Education reveals a long trajectory of social, cultural, and political transformations. From a time when childhood was not even recognized as a distinct stage of life to its consecration as a legally guaranteed right, a conception of the child as active, creative, and participatory has been consolidated—one whose integral development must be ensured through educational practices that combine care, affection, knowledge, and citizenship.

Environmental Education applied to Early Childhood Education constitutes an essential field of human development, as it is at this stage of life that the child begins to construct their perception of the world and their relationship with the environment. This pedagogical approach is based on the principle that the development of attitudes, values, and sustainable behaviors should begin in the earliest years of life, when the cognitive, affective, and social foundations that guide how individuals interact with the natural and social environment are formed (Carvalho, 2008). Therefore, integrating Environmental Education into the daily routine of Early Childhood Education is an educational and ethical strategy aimed at promoting critical and participatory awareness from childhood, strengthening the commitment of new generations to the preservation of life in all its forms.

The discussion on Environmental Education emerged on the global stage through major international conferences organized by the United Nations, particularly the Stockholm Conference (1972), which for the first time linked economic development and environmental preservation, and the Tbilisi Conference (1977), promoted by UNESCO and the United Nations Environment Programme (UNEP), which defined principles and objectives for Environmental Education at all levels of schooling (UNESCO, 1978). These documents were fundamental in consolidating the idea that education is an indispensable tool for addressing the global environmental crisis by forming critical, conscious, and responsible citizens. In Brazil, the National Environmental Education Policy (Law No. 9.795/1999) establishes that Environmental Education must be present in a transversal and permanent manner at all levels and modalities of education, as an essential component rather than an isolated subject (Brasil, 1999).

In Early Childhood Education, Environmental Education is primarily realized through daily practices, sensory experiences, and activities that allow children to observe, explore, and understand nature and the phenomena around them. According to Loureiro (2004), Environmental Education should be understood as a continuous and permanent process of formation that articulates scientific knowledge with everyday knowledge, care for the environment, and critical reflection on lifestyles. Thus, the approach in Early Childhood Education should be integrated and playful, fostering interaction among body, emotion, imagination, and thought—fundamental elements of child development.

Faria (2007) emphasizes that Early Childhood Education is the first stage of Basic Education and has the function of educating and caring in an inseparable manner, promoting the child's integral development in its physical, psychological, intellectual, and social aspects. When articulated with Environmental Education, this function expands, as care also comes to include care for others and for the environment. This conception aligns with Gadotti's (2000) proposal, which views Environmental Education as education for sustainability—a process that seeks to transform values and attitudes in favor of a new civilizational model that is more supportive, ethical, and balanced.

The child, as Faria (1999) stresses, is a historical, social, and cultural being capable of producing meanings and acting upon the world. By understanding the environment as a space of symbolic and affective interactions, Environmental Education in Early Childhood Education recognizes the child as an active subject in constructing knowledge about the world they inhabit. For Reigota (2017), Environmental Education must go beyond transmitting information about ecology and recycling, promoting the development of political, critical, and participatory awareness aimed at social transformation and building a fairer and more sustainable world.

In the context of pedagogical practices, Environmental Education in Early Childhood Education should be integrated into the institution's pedagogical project and not limited to occasional or commemorative activities. Carvalho (2012) highlights that educational actions should enable children to experience nature in its various dimensions—esthetic, ethical, affective, and cognitive—through concrete experiences that awaken curiosity and wonder about the natural world. This includes, for example, cultivating school gardens, caring for plants, observing insects, using recyclable materials in play, and developing projects involving resource reuse, water and energy conservation, and respect for living beings.

The National Common Curricular Base (BNCC, Brazil, 2018) reinforces this perspective by recognizing that Early Childhood Education should promote experiences that contribute to building ethical values and attitudes of responsibility toward the environment and the community. The BNCC understands that learning at this stage occurs globally and integratively and that direct contact with nature is fundamental for developing sensitivity, imagination, and ecological awareness.

In this regard, Guimarães (2004) argues that Environmental Education should be seen as a transformative and emancipatory practice that enables the child to understand themselves as an integral part of nature and as an agent of social change. The author advocates that educators adopt a reflective and dialogical stance, stimulating curiosity and critical thinking rather than transmitting ready-made and moralizing content. For this, it is essential that teachers receive continuous training and have access to materials and methodologies that value interdisciplinarity, experimentation, and affective connection with the environment.

The relationship between affectivity and Environmental Education is central in practices with young children. Wallon (1941) and Vygotsky (1998) have shown that learning is closely linked to emotion and social interaction. Thus, when the child experiences situations in which care for the environment is part of daily school life—such as separating waste, caring for plants, or respecting animals—they internalize values of respect and solidarity that will influence their behavior throughout life. Tiriba (2005) adds that pedagogical work in Early Childhood Education should create conditions for the child to feel

part of nature and perceive the impact of their actions on it, developing from an early age a sense of belonging and environmental responsibility.

According to Vygotsky (2008, p. 76), child development and learning occur through relationships in which the child "in their daily life, observing, experimenting, imitating, receiving instruction from more experienced people in their culture, learns to ask questions and also to obtain answers to a series of issues." Early Childhood Education is primarily responsible for promoting the child's overall development, and teaching at this stage contributes to significant changes in present and future generations. Therefore, prioritizing Environmental Education with children is a way to promote the formation of conscious, critical, and participatory citizens. According to the Quality Parameters for Early Childhood Education (2008, p. 14), the child is "a unique, complete human being who is, at the same time, growing and developing," which reinforces the importance of working with the environment as a fundamental element for life and for forming ethical and sustainable values.

Tiriba (2005) reminds us that human beings share life on Earth with countless animal and plant species, without which life on the planet cannot exist. This perception reinforces the role of Environmental Education as a promoter of ecological awareness based on respect, cooperation, and care for others. Reigota (2009, p. 36) defines the environment as "a determined and/or perceived place where natural and social aspects are in dynamic and constant interaction." He further adds that Environmental Education should be understood as a political process that seeks to promote dialogue among different forms of knowledge and allow students and teachers to jointly construct meanings and definitions about the environment and its preservation (Reigota, 2009, p. 37).

In this sense, Talamoni and Sampaio (2008) state that "Environmental Education mediates the appropriation, by individuals, of the qualities and capacities necessary for responsible transformative action toward the environment in which they live" (p. 12), and warn that it cannot be restricted to teaching ecology or natural sciences but should permeate all subjects, always contextualized with students' realities. The authors also emphasize that Environmental Education should not be used as a form of indoctrination but as an instrument of collective awareness, promoting a sense of shared responsibility among teachers, administrators, families, and the school community.

Therefore, Environmental Education in Early Childhood Education is not merely a set of ecological practices but a proposal for integral formation that combines knowledge, sensitivity, and ethics. It is through meaningful and affective experiences that the child learns to care for themselves, others, and the world, understanding that environmental balance depends on human relationships and everyday choices. By integrating Environmental Education into educational processes from childhood, schools contribute to forming conscious, critical individuals committed to the sustainability of life on the planet. As Gadotti (2000) emphasizes, educating environmentally is educating for hope, responsibility,

and the future—a future that begins in childhood, when the first seeds of care, awareness, and love for the planet are planted.

Environmental Education integrated into Early Childhood Education has transformative potential because it acts on central dimensions of human development precisely when they are being formed: cognition, affectivity, and sociability. In early childhood, the brain and affective-relational repertoires are particularly sensitive to concrete, multimodal, and meaningful experiences; therefore, pedagogical practices involving contact with nature, gardening projects, observation of life cycles, and collective care not only expand knowledge about the natural world but also shape capacities for attention, language, problem-solving, and emotional regulation. Recent literature in education and child development confirms this intuition with evidence: systematic reviews of environmental education and nature-based programs show consistent gains in executive cognition, sustained attention, and indicators of self-regulation—effects that occur when activities are regular, integrated into the curriculum, and mediated by adults trained to listen and provoke meaningful questions in children. Synthesis studies indicate that interventions in early childhood education contexts that prioritize nature-based experiences or the use of school gardens promote improvements in early scientific reasoning, investigative curiosity, and observation and classification skills—competencies fundamental to cognitive development in early childhood (Ardoin et al., 2020).

On the affective level, Environmental Education fosters the construction of care bonds—with others and with the environment—that are constitutive of an ethic of care. When children handle soil, water plants, feed worms, or observe the metamorphosis of an insect, they experience concrete empathy and responsibility: they learn that simple actions have consequences for fragile living beings and that care involves routine, patience, and cooperation. This affective repertoire translates into greater motivation to protect and preserve, as well as more adaptive emotional regulation (for example, tolerance for frustration when dealing with natural losses and the ability to wait for results in cultivation projects). Reviews on nature play show that regular contact with natural environments increases indicators of well-being, reduces anxiety symptoms, and improves sleep quality in children—results that have direct implications for emotional readiness to learn and socialize (Prins et al., 2022).

Socially, environmental practices in Early Childhood Education often occur in collective projects (gardens, cleanup campaigns, exchange fairs, discussion circles), creating rich opportunities for negotiating rules, dividing tasks, and building social language. In these activities, children learn to cooperate, communicate intentions, negotiate roles, and resolve small conflicts—social skills that transfer to other school and family contexts. Research investigating school garden programs and gardening projects indicates gains in group work skills, self-esteem, and positive attitudes toward school, especially in socioeconomically vulnerable populations. Furthermore, green environments in schools are associated with reduced distraction and greater engagement in collective activities, facilitating the development of more democratic and collaborative pedagogical processes (Davis et al., 2023).

The formation of sustainable values and attitudes begins long before technical concepts about "sustainability" can be explicitly taught. For young children, values such as respect, care, justice, and responsibility take shape through sensory practices and shared rituals: planting a seedling, separating waste, saving water while brushing teeth, or listening to stories that highlight interdependence among living beings. Environmental Education, when approached in a contextualized and non-moralizing way, offers educators and families tools to transform everyday actions into ethical meanings: caring for the garden becomes a lesson on cycles but also an exercise in collective commitment; observing a caterpillar becomes an entry point for discussions about transformation, patience, and protecting small lives. Authors who study education for sustainability argue that pro-environmental attitudes take root when linked to emotions and concrete experiences, not merely to informational messages—hence the importance of experiential practices from an early age (UNESCO, 1978).

Empirical research increasingly documents measurable impacts of Environmental Education practices in Early Childhood Education (and in early grades). Ardoin et al., in a systematic review of studies on environmental education in early childhood, concluded that well-designed interventions support children's affective and cognitive growth and contribute to pro-environmental attitudes, although they highlight the need for more robust research designs and standardized measures to capture behavioral changes over time (Ardoin et al., 2020).

Experimental studies with gardening programs show positive effects on modest academic learning (for example, small improvements in reading and scientific concepts when garden activities are integrated into the curriculum), as well as robust effects on nutritional knowledge and eating behavior (children tend to accept more fruits and vegetables they have grown). These findings from school-based interventions indicate that actions related to environmental management can simultaneously influence formal learning and health habits (Prins et al., 2022).

Regarding the promotion of pro-environmental behaviors (PEBs), recent meta-analyses of interventions with children and youth show moderate to large effects when activities are contextualized, participatory, and repeated—that is, a single "recycling lesson" is not enough: impact is greater when there are ongoing projects involving decision-making, monitoring, and feedback. A recent meta-analysis showed that educational programs produce a measurable increase in children's pro-environmental actions, with spillover effects on families through social contagion (children bring practices home and influence family habits) (Ardoin et al., 2020).

From a neurobiological and broad cognitive development perspective, interdisciplinary literature between developmental neuroscience and environmental studies indicates that enriched experiences (cognitively stimulating, emotionally safe, and physically active) promote trajectories of greater neural plasticity and better indicators of executive functions (working memory, inhibition, cognitive flexibility).

Natural environments and outdoor activities provide precisely this type of stimulation—complex, varied, and sensorially rich—and are therefore plausible candidates for improving core cognitive capacities. Recent reviews on environmental contributions to child development reinforce that positive environmental stimuli (including green spaces) correlate with gains in attention and learning, possibly mediated by reduced pollutants, increased physical activity, and lower exposure to chronic stress (Świątkowski et al., 2024).

Methodologically, studies of varying quality have been conducted: from detailed qualitative research documenting changes in children's language, play, and emotions (very useful for capturing intrinsic processes) to controlled trials testing impacts on specific measures (reading, scientific knowledge, eating attitudes). Syntheses by Ardoin et al. (2020) and reviews on nature-based play emphasize that the most consistent effects occur in affective and socio-emotional domains—empathy, curiosity, cooperation—while cognitive impacts appear when practices are intentionally connected to the curriculum and assessed with instruments sensitive to the developmental stage (Świątkowski et al., 2024).

It is important to note that not all interventions generate positive effects and that program design is decisive. Elements that increase effectiveness include: (a) consistent teacher training to mediate environmental experiences; (b) continuity and repetition of activities; (c) family and community involvement; (d) integration with curricular objectives (not treating the theme as an isolated activity); (e) adequate physical spaces and rich materials; and (f) reflective evaluation using instruments appropriate for the age group. Failures in any of these elements can reduce or nullify observable benefits. These conclusions reinforce the view that effective Environmental Education is always pedagogical—it requires planning, mediation, and evaluation—not a sum of casual actions (Świątkowski et al., 2024).

In the Brazilian context, national studies and reports (including reviews on urban contexts and the capacities of public policies) indicate that Environmental Education programs in Early Childhood Education can be particularly transformative in contexts of inequality, where children have little access to green spaces and cultivation experiences. Investments in school gardens, accessible community parks, and teacher training tend to generate dual returns: improvements in learning and reduction of opportunity gaps for early sensory and scientific experiences. National research also highlights the importance of articulating Environmental Education actions with health, nutrition, and social assistance programs to enhance impacts on children's integral development (UNICEF, 2024).

Practical examples illustrate this transformative potential: programs that converted schoolyards into gardens and science workshops reported increased family participation, improvements in children's diets, and greater sense of belonging to the school; interventions combining nature play with simple investigation projects recorded advances in early scientific language and causal vocabulary; initiatives integrating participatory monitoring (children measuring plant growth and recording data) stimulated

rudimentary notions of scientific method and collective responsibility. These case reports—when systematically evaluated—converge with synthesis evidence and offer valuable material for local implementation (UNICEF, 2024).

In terms of public policy and practical implications, available evidence supports clear recommendations: prioritize continuous teacher training for environmental practices in early childhood; articulate Environmental Education projects with curricular goals and health and nutrition policies; invest in safe infrastructure that enables regular contact with nature (gardens, green areas); ensure programs are culturally relevant and co-constructed with families and communities; and systematically evaluate projects using appropriate indicators (combining qualitative and quantitative measures sensitive to developmental stages). These measures increase the likelihood that investments in Environmental Education will generate lasting benefits for children's cognitive, affective, and social development (UNICEF, 2024).

Finally, it is crucial to emphasize that the observed impacts are not merely "instrumental improvements" in school outcomes: they represent profound changes in how children perceive themselves in relation to the world—as agents capable of caring, investigating, and transforming. Well-structured Environmental Education thus contributes to forming individuals who are more attentive, empathetic, and critical, capable of integrating knowledge and values into everyday actions. This has powerful implications for building societies that are more resilient and committed to caring for the common good—an objective that goes far beyond teaching content and finds in childhood a privileged ground for intervention (UNESCO, 1978).

Environmental education in early childhood is fundamental for the integral development of children and for fostering sustainable awareness from the earliest years of life. However, its implementation faces several practical challenges in schools, such as the lack of adequate material and pedagogical resources to address these contents in a playful and effective manner (Santos & Silva, 2019). Many institutions lack green spaces, recyclable materials, and equipment that enable hands-on activities and bring children closer to nature, limiting opportunities for environmental learning. Furthermore, physical infrastructure is often not prepared to accommodate projects that require direct contact with the environment—a problem that is exacerbated in urban contexts, where access to nature is reduced and creativity and integration of pedagogical strategies depend on institutional support and guidance (Moura et al., 2021).

Another crucial point is teacher training. Many early childhood educators do not have specific training in environmental education, which compromises the depth and quality of teaching (Oliveira & Carvalho, 2020). The absence of adequate preparation hinders the development of contextualized pedagogical practices and the promotion of a critical and proactive stance among students. Therefore, investing in continuous training that encompasses both theoretical knowledge and participatory methodologies and practices that integrate the environment into school routines and students' social realities is urgent (Freitas & Ramos, 2018). Teacher training involves not only mastery of content but also the construction of a vision of the school's role in shaping ecological values and environmental citizenship.

Future perspectives for environmental education in early childhood point to the need for more effective public policies and partnerships among schools, families, communities, and environmental agencies to expand the reach and effectiveness of educational actions (Costa & Almeida, 2022). Collaborative projects involving these actors can generate meaningful and lasting experiences for children. Moreover, incorporating digital technologies, such as educational games and interactive platforms, can facilitate the understanding of complex topics and stimulate students' interest, provided they are used with balance and pedagogical criteria (Nascimento & Soares, 2020).

The transversal integration of environmental education into the early childhood curriculum must be continuously pursued, ensuring that sustainability permeates different areas of knowledge and daily school practices, strengthening children's critical and holistic view of the world (Mourão & Silva, 2017). Thus, overcoming material limitations, investing in teacher training, and strengthening institutional partnerships are essential for environmental education to fulfill its transformative role, forming conscious and responsible citizens. The future of sustainable education depends on the ability of institutions to innovate, integrate, and commit to preserving the planet from early childhood.

Early childhood education, as the first stage of basic education, has as its main objective the integral development of the child, considering that assessments should be formative, accompanying growth without prematurely promoting advancement to subsequent stages (Brasil, 1996). Legislative changes, such as Laws No. 11.114/2005 and No. 11.274/2006, redefined the guidelines for early childhood education and elementary education, reinforcing the importance of serving children from zero to five years old and extending elementary education to nine years (Brasil, 2005; 2006). These changes highlight the need for teachers to understand children's unique characteristics, considering their cultural and social context, as emphasized by Braga (2014), who underscores the importance of viewing contemporary children as immersed in a technological and dynamic world.

However, despite social and educational advances, Azevedo (2013) draws attention to the fact that childhood is often marked by precocity, exclusion, and violence, highlighting the ongoing struggle of Brazilian society to defend children's rights. Early childhood educators must therefore engage in continuous professional development, seeking knowledge and skills that qualify them to meet the specificities of this stage (Freire, 1996; Azevedo, 2013). Teachers must be able to integrate education, care, and play, valuing emotional, affective, physical, linguistic, cognitive, and social aspects, as emphasized by Orgari and Molina (2003). This role demands autonomy, research, reflection, and ethical commitment, considering that teachers are fundamental agents in the process of learning and social development (Nóvoa, 1995; Gomes, 2013).

Initial and continuing teacher education should be viewed as an investment rather than a cost, encompassing the articulation of theory, practice, and research to build a solid professional identity and high-quality teaching (Veiga, 2001; Gatti & Barreto, 2009). Educators need to understand the diversity of children, caring for, protecting, welcoming, and stimulating them, rethinking methodologies with creativity and sensitivity (Bassedas, Huguet & Solé, 1999; Oliveira, 2011). Teachers are protagonists in mediating relationships between the child, the adult, and the world, and must refine their practice through ethical and political choices, recognizing their professional identity and exercising autonomy (Gomes, 2013).

It is noteworthy that teaching in early childhood education requires specific knowledge about child development and appropriate methodologies to promote meaningful learning while respecting each child's uniqueness (Silva, 2006; Ostetto, 2012). Teaching practice involves multiple types of knowledge— theoretical, disciplinary, curricular, and experiential—that must be articulated to ensure innovative, dynamic, creative, and conscious education (Freire, 1996; Tardif, 2002). Finally, educators should organize environments that foster childhood time, coexistence, and integral development, promoting self-esteem, self-concept, and knowledge construction in a continuous process of formation and reflection (Azevedo, 2013; Barbosa, 2009).

## INNOVATIVE PEDAGOGICAL PRACTICES FOR ENVIRONMENTAL EDUCATION IN EARLY CHILDHOOD EDUCATION

Environmental Education (EE) in Early Childhood Education plays a fundamental role in shaping conscious, critical, and responsible citizens in the face of contemporary socio-environmental challenges. At this initial stage of life, children develop perceptions, values, and attitudes that can guide their relationship with the environment throughout their lives. Therefore, adopting innovative pedagogical practices that spark interest, promote active engagement, and foster the child's integral development—integrating cognitive, affective, and social aspects into the educational process—is essential.

Specialized literature emphasizes that pedagogical innovation in EE should be based on playful, interactive, and contextualized approaches, considering children's age group, prior experiences, and local socio-environmental context. According to Nóvoa (2009), innovation in education presupposes breaking away from traditional methods, valuing learner protagonism and collective knowledge construction. This premise is even more relevant in Early Childhood Education, as children need concrete stimuli and sensory experiences to develop critical thinking and environmental responsibility (Kellert, 2002).

One of the main challenges of EE in Early Childhood Education lies in reconciling the complexity of environmental themes with language accessible to children. To overcome this difficulty, innovative pedagogical practices employ play, dramatization, storytelling, and nature-based experiences as central strategies. According to Vygotsky (1998), play is a privileged form of learning in childhood because it stimulates imagination, socialization, and symbolic appropriation of the world. Thus, by associating play with environmental themes, educators create rich environments for exploration, experimentation, and the development of ecological awareness.

In this sense, the use of pedagogical projects has proven effective for organizing EE activities in Early Childhood Education, providing an integrated and interdisciplinary approach. These projects enable the investigation of environmental phenomena based on children's questions and interests, promoting research, observation, and dialogue. As Fleer (2011) points out, projects involving nature observation, school gardening, and selective waste collection foster the construction of meaningful knowledge and the formation of sustainable habits from childhood.

Another relevant aspect of innovative pedagogical practices is the incorporation of digital technologies as tools to support Environmental Education. The inclusion of multimedia resources such as videos, interactive games, and educational apps can broaden access to information and stimulate children's curiosity about the environment. Studies indicate that the conscious and guided use of these technologies contributes to environmental awareness and the development of digital competencies (Barbosa, 2019). However, it is essential that technology use be combined with concrete experiences,

such as outdoor activities and direct contact with natural elements, to ensure affective bonding and sensory experience, which are indispensable in Early Childhood Education (Chawla, 2007).

Furthermore, the participation of the school community and families in EE practices constitutes an important pedagogical innovation, as it expands the reach of educational actions and strengthens the collective construction of sustainable values. Programs that involve families in activities such as cleanup campaigns, toy exchange fairs, and recycling workshops contribute to integrating school, family, and environment (Moura, 2014). This articulation strengthens the support network for child development, extending the impact of environmental learning beyond the school space.

Interdisciplinarity also emerges as a fundamental axis in innovative EE practices in Early Childhood Education. Environmental themes are integrated into different areas of knowledge—such as language, arts, mathematics, and science—enabling the construction of meanings from multiple perspectives. According to Soares and Barreto (2016), this approach promotes a systemic understanding of environmental problems and the connection between formal and everyday knowledge, essential for forming critical and committed environmental awareness.

For innovative pedagogical practices to be consolidated in Early Childhood Education, continuous teacher training is indispensable. Many educators still feel insecure about addressing environmental themes, either due to lack of specific preparation or absence of adequate materials (Alves & Carvalho, 2018). Investing in teacher training through courses, workshops, and study groups expands methodological repertoire and strengthens the educator's identity as a transformative agent in EE. From this perspective, innovation encompasses not only classroom practices but also school management, collective planning, and the construction of an organizational culture oriented toward sustainability (Sanches, 2017).

Among innovative practices, environmental educational games stand out for promoting learning in a playful and collaborative way. Games such as "trash hunt," "environmental memory," and "biodiversity puzzle" stimulate attention, logical reasoning, and cooperation among children while addressing themes such as recycling, fauna, flora, and natural resource conservation (Mendonça & Silva, 2020). Playfulness thus proves to be a strategic pedagogical resource for sparking interest and fostering the appropriation of environmental concepts.

Another noteworthy practice is the use of outdoor environments and outdoor education, which allows children direct contact with natural elements. According to Louv (2008), experiences in nature contribute to developing attention, creativity, and a sense of belonging to the environment. Sensory gardens, school gardens, and spaces for observing insects and birds are environments that encourage active learning, curiosity, and appreciation of local biodiversity. Additionally, such experiences promote physical and emotional well-being, encouraging healthy habits and attitudes of care.

Building partnerships with environmental institutions, universities, and non-governmental organizations also has the potential to innovate EE practices. These partnerships can provide resources, training, and projects that enrich the curriculum and bring children closer to diverse environmental realities (Ferreira & Lima, 2015). Expanding dialogue between school and society reinforces the community dimension of environmental education, increasing child protagonism and encouraging active citizenship.

It is essential to emphasize that innovative pedagogical practices for EE in Early Childhood Education must respect principles of cultural diversity and inclusion. Valuing traditional, indigenous, and local knowledge, as well as meeting the needs of children with different conditions, enriches the educational process and strengthens social justice in sustainability (Souza & Pacheco, 2019). Incorporating multiple voices and perspectives contributes to a more plural and democratic education, capable of forming critical and supportive individuals.

Finally, the evaluation of innovative EE practices in Early Childhood Education should consider not only cognitive aspects but also changes in children's attitudes, values, and behaviors. Qualitative tools such as portfolios, photographic records, observations, and narratives allow capturing the complexity of the educational process and the impact of interventions (Pereira, 2016). Reflective evaluation contributes to the continuous improvement of practices and to strengthening the commitment to sustainability.

In light of the above, it is evident that innovative pedagogical practices for Environmental Education in Early Childhood Education should be diverse, integrative, and centered on children's protagonism. By combining playful methodologies, educational technologies, outdoor experiences, interdisciplinary projects, community participation, and appreciation of diversity, it is possible to build an education that promotes integral and sustainable development from the earliest years of life. Pedagogical innovation, therefore, constitutes an indispensable path for addressing the environmental and social challenges of the 21st century, building a fairer, more balanced, and more conscious future.

This research aimed to understand the importance of environmental education in early childhood education, recognizing it as an indispensable tool for the integral development of the child and for building a culture of sustainability, citizenship, and respect for life. Throughout the study, it became evident that environmental education, when introduced from the earliest years of schooling, significantly contributes to children's cognitive, affective, and social development, fostering ethical values, attitudes of care for the environment, and strengthening the sense of belonging to nature. This approach, by integrating knowledge, sensitivity, and practice, proves essential for forming critical citizens committed to preserving the planet.

During the course of the study, it was observed that environmental education cannot be understood as an isolated curricular content but as a transversal axis that should permeate all areas of knowledge and pedagogical practices. This perspective was reinforced by several authors consulted, such as Loureiro (2004), Carvalho (2008), Reigota (2017), and Gadotti (2000), who affirm that environmental education is a continuous, interdisciplinary, and transformative process that goes beyond the mere act of teaching ecological content and seeks to promote a profound change in individuals' ways of thinking and acting. In early childhood education, this transformation becomes even more relevant, as it is during childhood that the foundations of personality, morality, and social consciousness are built.

Chapter 1 presented the historical and conceptual foundations of environmental education, contextualizing its origin in the global and national scenario. From the Industrial Revolution and major environmental disasters of the 20th century emerged movements and conferences that marked the beginning of global concern for the environment, culminating in the formulation of public policies and legislation aimed at sustainability. In this context, the Stockholm Conference (1972), the Belgrade Charter (1975), the Tbilisi Conference (1977), and Eco-92 were important milestones that consolidated the role of environmental education as an instrument of awareness and social transformation. In Brazil, the institutionalization of environmental education through Law No. 9.795/1999, along with the guidelines of the LDB No. 9.394/1996 and the BNCC (2018), represented significant progress in integrating environmental themes into educational processes, reinforcing the country's commitment to sustainability.

Chapter 2 discussed early childhood education and its contemporary challenges, presenting it as the first stage of basic education and the primary space for developing human potential. At this stage, the child learns through curiosity, play, and experimentation, making the school environment fertile ground for awakening ecological awareness. Authors such as Vygotsky (1998), Piaget (1978), and Wallon (1941) emphasize that child development occurs through interaction with the environment and with others, reinforcing the importance of concrete and affective experiences involving nature. Early childhood education, therefore, plays an essential role in building affective and ethical bonds between the child and the environment, with the educator acting as the mediator of this process of discovery and sensitization.

Chapter 3 constituted the core of the study, analyzing the practical application of environmental education in early childhood education. Methodologies, strategies, and experiences were discussed to demonstrate how sustainability can be addressed in a playful, interdisciplinary, and meaningful way. Playfulness was highlighted as a fundamental element in the learning process, as play enables the child to understand the world, express emotions, and construct knowledge. Through activities such as school gardens, storytelling, cooperative games, and recycling projects, children not only learn environmental concepts but also experience attitudes of solidarity, empathy, and respect. This concrete experience of learning by doing differentiates environmental education from other pedagogical practices, as it involves the child integrally—body, mind, and emotion—promoting learning with meaning and purpose.

Chapter 4 presented the impacts and benefits of environmental education in childhood, based on recent research and studies that demonstrate its effectiveness. Results showed that environmental practices contribute to cognitive development by stimulating observation, scientific curiosity, and critical thinking; to affective development by promoting care for nature and valuing life; and to social development by strengthening cooperation, dialogue, and respect for differences. Furthermore, environmental education proved capable of awakening a sense of belonging and responsibility, forming individuals more aware of their role in the environment in which they live. Studies such as those by Ardoin et al. (2020), Davis et al. (2023), and Prins et al. (2022) reinforce that children who experience meaningful interactions with nature tend to develop greater environmental empathy and lasting pro-ecological attitudes.

Chapter 5 addressed the challenges and future perspectives of environmental education in early childhood education, recognizing that despite theoretical and legal advances, there are still obstacles that hinder its consolidation in pedagogical practices. Among these challenges are insufficient teacher training in environmental education, scarcity of teaching resources and green spaces in schools, and lack of continuity in environmental education actions within public policies. Many educators still view the theme as secondary, restricted to commemorative dates or occasional projects. However, the effective implementation of environmental education requires institutional commitment, ongoing training, and curricular integration. To overcome these limitations, it is necessary to invest in teacher training, expand dialogue among school, family, and community, and develop projects involving real sustainability practices. Schools should serve as spaces of example and transformation, adopting ecological attitudes in their routines, such as water and energy conservation, conscious use of materials, and proper waste management.

Throughout this research, it became evident that environmental education in early childhood education represents a fundamental instrument for social and cultural transformation, as it forms children who are critical, reflective, and aware that their actions impact the world. Learning that involves

affectivity, play, and care awakens feelings of empathy and belonging, essential for building a solid environmental ethic. In this sense, educating for the environment means educating for life, coexistence, solidarity, and respect for diversity.

The analyses also showed that the success of environmental education depends on collective engagement—of educators, educational institutions, families, and public policies. The educator, by adopting environmentally responsible pedagogical practices, becomes a multiplying agent of knowledge and example. Families, in turn, reinforce the values learned at school, creating an environment of continuity and coherence in children's formation. Public policies must guarantee material and formative conditions so that environmental education ceases to be a theoretical ideal and becomes an everyday reality.

Thus, it is concluded that environmental education in early childhood education is not merely a subject or a transversal theme but a formative principle capable of transforming how new generations relate to the planet. It teaches that respect for life, in all its forms, is the foundation of sustainability and citizenship. Through it, the child learns that the environment is not something external but an integral part of their own existence. In this way, the school assumes an essential role in forming ecological subjects, aware of their responsibility and prepared to face future challenges with sensitivity, creativity, and ethical commitment.

Therefore, the main contribution of this study was to demonstrate that investing in environmental education from childhood is investing in the future of humanity. Environmental education is a seed planted in the minds and hearts of children, which germinates into conscious attitudes, respect for nature, and collective actions for a more balanced and just world. This is the foundation for building a sustainable society, where development aligns with preservation and progress harmonizes with life. The challenge for educational institutions is to transform environmental education into a constant practice, experienced daily, so that new generations grow not only with knowledge but with wisdom, empathy, and environmental responsibility.

1. Alves, M. C.; Carvalho, A. M. P. Formação de professores para a educação ambiental: desafios e possibilidades [Teacher Training for Environmental Education: Challenges and Possibilities]. Revista Educação em Foco, v. 7, n. 2, p. 45–61, 2018.

2. Ardoin, N. M. et al. Early childhood environmental education: A systematic review. Environmental Education Research, 2020. Available at: sciencedirect.com.

3. Azevedo, M. M. Infância e sociedade: desafios contemporâneos [Childhood and Society: Contemporary Challenges]. São Paulo: Cortez, 2013.

4. Barbosa, L. M. Educação infantil: fundamentos, práticas e desafios [Early Childhood Education: Fundamentals, Practices, and Challenges]. São Paulo: Loyola, 2009.

5. Barbosa, L. A. Tecnologias digitais na educação ambiental infantil: potencialidades e limitações [Digital Technologies in Early Childhood Environmental Education: Potentialities and Limitations]. Educação & Tecnologia, v. 15, n. 1, p. 89–106, 2019.

6. Bassedas, J. M.; Huguet, A.; Solé, I. Educar a los niños pequeños [Educating Young Children]. Madrid: Morata, 1999.

7. Braga, E. M. Educação infantil: uma perspectiva contemporânea [Early Childhood Education: A Contemporary Perspective]. Rio de Janeiro: Vozes, 2014.

8. Brasil. Constituição da República Federativa do Brasil, de 5 de outubro de 1988 [Constitution of the Federative Republic of Brazil, October 5, 1988]. Brasília: Casa Civil, 1988. Available at: http://www.planalto.gov.br/ccivil_03/constituicao/constituicao.htm. Accessed on: 9 July 2025.

9. Brasil. Decreto nº 4.281, de 25 de junho de 2002 [Decree No. 4.281 of June 25, 2002]. Regulamenta a Lei nº 9.795, de 27 de abril de 1999, que institui a Política Nacional de Educação Ambiental, e dá outras providências [Regulates Law No. 9.795 of April 27, 1999, Which Establishes the National Environmental Education Policy]. Brasília: Casa Civil, 2002. Available at: http://www.planalto.gov.br/ccivil_03/decreto/2002/d4281.htm. Accessed on: 9 July 2025.

10. Brasil. Decreto nº 9.672, de 2 de janeiro de 2019 [Decree No. 9.672 of January 2, 2019]. Aprova a Estrutura Regimental e o Quadro Demonstrativo dos Cargos em Comissão e das Funções de Confiança do Ministério do Meio Ambiente [Approves the Regimental Structure and Demonstrative Framework of Commissioned Positions and Trust Functions of the Ministry of Environment]. Brasília: Câmara dos Deputados, 2019. Available at: https://www2.camara.leg.br/legin/fed/decret/2019/decreto-9672-2-janeiro-2019-787579-publicacaooriginal-157173-pe.html. Accessed on: 9 July 2025.

11. Brasil. Decreto nº 10.455, de 11 de agosto de 2020 [Decree No. 10.455 of August 11, 2020]. Aprova a Estrutura Regimental e o Quadro Demonstrativo dos Cargos em Comissão e das Funções de Confiança do Ministério do Meio Ambiente [Approves the Regimental Structure and Demonstrative Framework of Commissioned Positions and Trust Functions of the Ministry of Environment]. Brasília: Casa Civil, 2020. Available at: https://presrepublica.jusbrasil.com.br/legislacao/903270414/decreto-10455-20 Accessed on: 9 July 2025.

13. Brasil. Decreto nº 73.030, de 30 de outubro de 1973 [Decree No. 73.030 of October 30, 1973]. Cria, no âmbito do Ministério do Interior, a Secretaria Especial do Meio Ambiente (SEMA), e dá outras providências [Creates, Within the Ministry of the Interior, the Special Secretariat for the Environment (SEMA)]. Brasília: Presidência da República, 1973. Available at: https://legislacao.presidencia.gov.br/atos/?tipo=DEC&numero=73030&ano=1973&ato=06ao3YE1kenRVTcbf . Accessed on: 9 July 2025.

14. Brasil. Lei nº 4.771, de 15 de setembro de 1965 [Law No. 4.771 of September 15, 1965]. Institui o novo Código Florestal [Establishes the New Forest Code]. Brasília: Casa Civil, 1965. Available at: http://www.planalto.gov.br/ccivil_03/leis/l4771.htm . Accessed on: 9 July 2025.

15. Brasil. Lei nº 6.938, de 31 de agosto de 1981 [Law No. 6.938 of August 31, 1981]. Dispõe sobre a Política Nacional do Meio Ambiente, seus fins e mecanismos de formulação e aplicação [Provides for the National Environmental Policy, Its Purposes and Mechanisms for Formulation and Application]. Brasília: Casa Civil, 1981. Available at: http://www.planalto.gov.br/ccivil_03/leis/l6938.htm . Accessed on: 9 July 2025.

16. Brasil. Lei nº 7.735, de 22 de fevereiro de 1989 [Law No. 7.735 of February 22, 1989]. Dispõe sobre a extinção de órgão e de entidade autárquica, cria o Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis [Provides for the Extinction of Agencies and Autarchic Entities, Creates the Brazilian Institute of Environment and Renewable Natural Resources]. Brasília: Casa Civil, 1989. Available at: http://www.planalto.gov.br/ccivil_03/leis/l7735.htm . Accessed on: 9 July 2025.

17. Brasil. Lei nº 9.394, de 20 de dezembro de 1996 [Law No. 9.394 of December 20, 1996]. Estabelece as diretrizes e bases da educação nacional [Establishes the Guidelines and Bases of National Education]. Brasília: Casa Civil, 1996. Available at: http://www.planalto.gov.br/ccivil_03/leis/l9394.htm . Accessed on: 9 July 2025.

18. Brasil. Lei nº 9.795, de 27 de abril de 1999 [Law No. 9.795 of April 27, 1999]. Dispõe sobre a educação ambiental, institui a Política Nacional de Educação Ambiental [Provides for Environmental Education, Establishes the National Environmental Education Policy]. Brasília: Casa Civil, 1999. Available at: http://www.planalto.gov.br/ccivil_03/leis/l9795.htm . Accessed on: 9 July 2025.

19. Brasil. Lei nº 10.837, de 16 de janeiro de 2004 [Law No. 10.837 of January 16, 2004]. Estima a receita e fixa a despesa da União para o exercício financeiro de 2004 [Estimates Revenue and Sets Union Expenditure for Fiscal Year 2004]. Brasília: Casa Civil, 2004. Available at: http://www.planalto.gov.br/ccivil_03/_ato2004-2006/2004/lei/l10.837.htm . Accessed on: 9 Aug. 2025.

20. Brasil. Lei nº 11.114, de 16 de maio de 2005 [Law No. 11.114 of May 16, 2005]. Altera a LDB para tornar obrigatório o ensino fundamental a partir dos 6 anos [Amends the LDB to Make Elementary Education Mandatory from Age 6]. Diário Oficial da União, Brasília, 17 May 2005.

21. Brasil. Lei nº 11.274, de 6 de fevereiro de 2006 [Law No. 11.274 of February 6, 2006]. Altera a duração do ensino fundamental para nove anos [Changes the Duration of Elementary Education to Nine Years]. Diário Oficial da União, Brasília, 7 Feb. 2006.

22. Brasil. Lei nº 13.978, de 17 de janeiro de 2020 [Law No. 13.978 of January 17, 2020]. Estima a receita e fixa a despesa da União para o exercício financeiro de 2020 [Estimates Revenue and Sets Union Expenditure for Fiscal Year 2020]. Brasília: Casa Civil, 2020. Available at: http://www.planalto.gov.br/ccivil_03/_ato2019-2022/2020/lei/l13978.htm . Accessed on: 9 Aug. 2025.

23. Brasil. Ministério da Educação. Resolução nº 1, de 30 de maio de 2012 [Resolution No. 1 of May 30, 2012]. Estabelece as Diretrizes Nacionais para a Educação em Direitos Humanos [Establishes National Guidelines for Human Rights Education]. Brasília: MEC, 2012. Available at: http://portal.mec.gov.br/dmdocuments/rcp001_12.pdf . Accessed on: 9 Aug. 2025.

24. Brasil. Ministério da Educação. Resolução nº 2, de 15 de junho de 2012 [Resolution No. 2 of June 15, 2012]. Estabelece as Diretrizes Curriculares Nacionais para a Educação Ambiental [Establishes National Curriculum Guidelines for Environmental Education]. Brasília: MEC, 2012. Available at: http://portal.mec.gov.br/dmdocuments/rcp002_12.pdf . Accessed on: 9 Aug. 2025.

25. Brimblecombe, P. The Clean Air Act after 50 years. Weather, London, v. 61, n. 11, p. 311–314, 2006.

26. Boff, L. Ecologia: Grito da Terra, Grito dos Pobres [Ecology: Cry of the Earth, Cry of the Poor]. Vozes, 2012.

27. Capra, F. The Hidden Connections: Integrating the Biological, Cognitive, and Social Dimensions of Life into a Science of Sustainability. Doubleday, 2002.

28. Carlos, R. Silent Spring. Boston: Houghton Mifflin Company, 1962.

29. Carvalho, I. C. M. Educação Ambiental: a formação do sujeito ecológico [Environmental Education: The Formation of the Ecological Subject]. São Paulo: Cortez, 2008.

30. Carvalho, I. C. M. Educação Ambiental: a formação do sujeito ecológico [Environmental Education: The Formation of the Ecological Subject]. 7. ed. São Paulo: Cortez, 2012.

31. Chawla, L. Childhood experiences associated with care for the natural world: A theoretical framework for empirical results. Children, Youth and Environments, v. 17, n. 4, p. 144–170, 2007.

32. Companhia Ambiental do Estado de São Paulo – CETESB. Histórico [History]. São Paulo: CETESB, 2022. Available at: https://cetesb.sp.gov.br/historico/ . Accessed on: 9 Aug. 2025.

33. Costa, M. R.; Almeida, P. L. Educação ambiental e políticas públicas: desafios para a infância [Environmental Education and Public Policies: Challenges for Childhood]. Revista Educação e Sustentabilidade, v. 9, n. 1, p. 45–62, 2022.

34. Duarte, R. H. “Turn to pollute”: poluição atmosférica e modelo de desenvolvimento no “milagre” brasileiro (1967–1973) [“Turn to Pollute”: Air Pollution and Development Model in the Brazilian “Miracle” (1967–1973)]. Tempo, Niterói, v. 21, n. 37, p. 64–87, 2015.

35. EElkington, J. Towards the sustainable corporation: Win-win-win business strategies for sustainable development. California Management Review, v. 36, n. 2, p. 90–100, 1994.

36. Faria, A. L. G. Educação Infantil e pedagogia da infância [Early Childhood Education and Childhood Pedagogy]. São Paulo: Cortez, 2007.

37. Faria, A. L. G. A criança, a pedagogia e a história [The Child, Pedagogy, and History]. São Paulo: Cortez, 1999.

38. Ferreira, R.; Lima, S. Parcerias para a educação ambiental na escola: possibilidades de construção coletiva [Partnerships for Environmental Education in Schools: Possibilities for Collective Construction]. Cadernos de Educação Ambiental, v. 12, n. 3, p. 121–138, 2015.

39. Fleer, M. Early childhood environmental education: A cultural-historical approach. Australian Journal of Environmental Education, v. 27, n. 1, p. 36–48, 2011.

40. Filho, W. L. et al. Education for Sustainable Development Goals: Learning Objectives. UNESCO Publishing, 2018.

41. Freitas, A. S.; Ramos, L. F. Formação continuada de professores em educação ambiental: práticas e desafios [Continuing Teacher Education in Environmental Education: Practices and Challenges]. Cadernos de Educação Ambiental, v. 15, n. 2, p. 78–95, 2018.

42. Freitas, C. L. Educação Ambiental: Origem e Conceitos [Environmental Education: Origin and Concepts]. Revista Brasileira de Educação Ambiental, v. 9, n. 1, p. 15–29, 2004.

43. Freire, P. Pedagogia da autonomia: saberes necessários à prática educativa [Pedagogy of Autonomy: Knowledge Necessary for Educational Practice]. 20. ed. São Paulo: Paz e Terra, 1996.

44. Gadotti, M. Pedagogia da Terra [Pedagogy of the Earth]. São Paulo: Peirópolis, 2000.

45. Gatti, B. A.; Barreto, S. Formação continuada: desafios e possibilidades [Continuing Education: Challenges and Possibilities]. In: Formação de professores: perspectivas e desafios [Teacher Training: Perspectives and Challenges]. São Paulo: Cortez, 2009. p. 215–234.

46. George, T. S. Minamata: Pollution and the Struggle for Democracy in Postwar Japan. Boston: Harvard University Press, 2002.

47. Gomes, C. Formação docente para a educação infantil: desafios e possibilidades [Teacher Training for Early Childhood Education: Challenges and Possibilities]. Revista Educação em Foco, v. 6, n. 1, p. 50–60, 2013.

48. Greater London Authority. 50 years on: The struggle for air quality in London since the great smog of December 1952. London: Greater London Authority, 2002.

49. Griswold, E. How “Silent Spring” ignited the environmental movement. The New York Times Magazine, 12 Sept. 2012. Available at: https://www.nytimes.com/2012/09/23/magazine/how-silent-spring-ignited-the-environmental-movement.html Accessed on: 9 Aug. 2025.

50. González-Gaudiano, E. La educación ambiental y el desarrollo sostenible: controversias y perspectivas [Environmental Education and Sustainable Development: Controversies and Perspectives]. Revista Mexicana de Investigación Educativa, v. 11, n. 33, p. 283–304, 2006.

51. Gutiérrez, M.; Benayas, J.; Calvo, A. La Década de la Educación para el Desarrollo Sostenible: propuestas y retos [The Decade of Education for Sustainable Development: Proposals and Challenges]. Educación Ambiental, n. 14, p. 20–31, 2006.

52. Hart, P.; Nolan, K. Education for Sustainable Development: Towards a Critical Agenda. Environmental Education Research, v. 14, n. 5, p. 593–595, 2008.

53. Hedefalk, M.; Almqvist, J.; Östman, L. Education for Sustainable Development: Exploring the Potential for Critical and Emancipatory Learning. Environmental Education Research, v. 20, n. 6, p. 804–821, 2014.

54. Huxley, T. H. Man's Place in Nature. London: Williams and Norgate, 1863.

55. Jackson, W. T. The creation of Yellowstone National Park. Journal of American History, [S.l.], v. 29, n. 2, p. 187–206, 1942.

56. Kellert, S. R. Experiencing nature: Affective, cognitive, and evaluative development in children. In: Kahn, P. H.; Kellert, S. R. (Eds.). Children and Nature: Psychological, Sociocultural, and Evolutionary Investigations. MIT Press, p. 117–151, 2002.

57. Loureiro, C. F. B. Trajetórias e fundamentos da Educação Ambiental [Trajectories and Foundations of Environmental Education]. São Paulo: Cortez, 2004.

58. Loureiro, C. M. B. Educação ambiental e educação para o desenvolvimento sustentável: desafios e perspectivas [Environmental Education and Education for Sustainable Development: Challenges and Perspectives]. Revista Brasileira de Educação Ambiental, 2015.

59. Louv, R. Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder. Algonquin Books, 2008.

60. Löwy, M. Capitalismo, educação e sustentabilidade: uma análise crítica [Capitalism, Education, and Sustainability: A Critical Analysis]. Revista Brasileira de Ciências Sociais, v. 29, n. 85, p. 35–48, 2014.

61. Marsh, G. P. Man and Nature; or, Physical Geography as Modified by Human Action. London: S. Low, Son and Marston, 1864.

62. Meadows, D. H.; Meadows, D. L.; Randers, J.; Behrens III, W. W. The Limits to Growth: A Report for the Club of Rome's Project on the Predicament of Mankind. Falls Church: Potomac Associates; Universe Books, 1972.

63. Mendonça, A.; Silva, P. Jogos educativos ambientais na educação infantil: possibilidades para a aprendizagem sustentável [Environmental Educational Games in Early Childhood Education: Possibilities for Sustainable Learning]. Revista de Educação e Sustentabilidade, v. 6, n. 2, p. 112–130, 2020.

64. Moura, C. F. A participação da família na educação ambiental: um estudo na educação infantil [Family Participation in Environmental Education: A Study in Early Childhood Education]. Revista Família & Escola, v. 11, n. 1, p. 78–91, 2014.

65. Ministério da Educação – MEC. Programa Nacional de Educação Ambiental – PRONEA [National Environmental Education Program – PRONEA]. Brasília: MEC, 2005. Available at: http://portal.mec.gov.br/secad/arquivos/pdf/educacaoambiental/pronea3.pdf . Accessed on: 9 Aug. 2025.

66. Nascimento, T. M.; Soares, R. B. Tecnologias digitais na educação ambiental infantil: potencialidades e limitações [Digital Technologies in Early Childhood Environmental Education: Potentialities and Limitations]. Educação & Tecnologia, v. 12, n. 1, p. 33–47, 2020.

67. Nóvoa, A. Os professores e sua formação [Teachers and Their Training]. Porto: Porto Editora, 1995.

68. Nóvoa, A. Os professores e a sua formação [Teachers and Their Training]. Porto Editora, 2009.

69. Oliveira, F. J.; Carvalho, M. A. Formação docente para a educação ambiental na educação infantil: uma análise crítica [Teacher Training for Environmental Education in Early Childhood Education: A Critical Analysis]. Revista Educação em Foco, v. 6, n. 1, p. 112–130, 2020.

70. Oliveira, L. Educação infantil e suas diversidades [Early Childhood Education and Its Diversities]. São Paulo: Cortez, 2011.

71. Oliveira-Formosinho, J. A educação infantil em Portugal: práticas e políticas [Early Childhood Education in Portugal: Practices and Policies]. Porto: Porto Editora, 2002.

72. Oragi, M.; Molina, N. Educação infantil: cuidar e educar [Early Childhood Education: Caring and Educating]. Porto Alegre: Artmed, 2003.

73. Ostetto, M. A. O olhar pedagógico para a criança [The Pedagogical View of the Child]. Revista Educação Infantil, v. 20, n. 129, p. 125–140, 2012.

74. Parâmetros de qualidade para a educação infantil [Quality Parameters for Early Childhood Education]. Brasília: MEC/SEB, 2008.

75. Prado, D. P.; Estevam, B. S. Uma introdução à crítica ambiental no extremo sul dos anos 70 [An Introduction to Environmental Criticism in Southern Brazil in the 1970s]. Historiæ, Campinas, v. 6, n. 2, p. 98–116, 2015.

76. Pramling Samuelsson, I. Sustainability and Early Childhood Education. International Journal of Early Childhood, v. 43, p. 103–118, 2011.

77. Prins, J. et al. Nature play in early childhood education: a systematic review. Frontiers in Psychology, 2022.

78. Pereira, M. S. Avaliação em educação ambiental: abordagens e desafios na educação infantil [Evaluation in Environmental Education: Approaches and Challenges in Early Childhood Education]. Revista Educação e Cultura, v. 22, n. 2, p. 156–172, 2016.

79. Rakesh, D. Environmental contributions to cognitive development. Developmental Review, 2024. Available at: sciencedirect.com.

80. Reigota, M. O que é educação ambiental [What Is Environmental Education]. 2. ed. São Paulo: Brasiliense, 2017.

81. Reigota, M. Educação Ambiental: uma abordagem política [Environmental Education: A Political Approach]. São Paulo: Cortez, 2009.

82. Rosa, A. V.; Sorrentino, M.; Raymundo, M. H. A. Dossiê sobre o desmonte das Políticas Públicas de Educação Ambiental na gestão do Governo Federal: 2019–2022 [Dossier on the Dismantling of Public Environmental Education Policies under the Federal Government: 2019–2022]. Brasília: EAResiste, 2022.

83. Sauvé, L. Environmental Education and Sustainable Development: A Further Appraisal. Canadian Journal of Environmental Education, v. 2, p. 7–34, 1997.

84. Santana, R.; Lima, M. Críticas à Educação para o Desenvolvimento Sustentável: reflexões sobre o papel do capital [Critiques of Education for Sustainable Development: Reflections on the Role of Capital]. Educação e Sociedade, v. 30, n. 106, p. 1–15, 2009.

85. Sartori, A.; Latrônico, M.; Campos, A. Os três pilares da sustentabilidade: o que realmente significa? [The Three Pillars of Sustainability: What Does It Really Mean?]. Revista Brasileira de Gestão Ambiental, v. 19, n. 2, p. 45–60, 2014.

86. Scott, W.; Gough, S. Sustainable Development and Learning: Framing the Issues. Routledge, 2004.

87. Sanches, R. Gestão escolar e sustentabilidade: práticas inovadoras para a educação ambiental [School Management and Sustainability: Innovative Practices for Environmental Education]. Cadernos de Gestão Educacional, v. 8, n. 1, p. 34–49, 2017.

88. Soares, D.; Barreto, M. Educação ambiental na educação infantil: abordagem interdisciplinar e contextualização [Environmental Education in Early Childhood Education: Interdisciplinary Approach and Contextualization]. Revista de Pesquisa em Educação, v. 11, n. 3, p. 97–115, 2016.

89. Souza, L. A.; Pacheco, J. Diversidade cultural e inclusão na educação ambiental infantil [Cultural Diversity and Inclusion in Early Childhood Environmental Education]. Revista Inclusão, v. 5, n. 1, p. 45–58, 2019.

90. Souza, L. A.; Rodrigues, R. Educação para o desenvolvimento sustentável: princípios e práticas [Education for Sustainable Development: Principles and Practices]. Editora Contexto, 2017.

91. Sterling, S. Sustainability Education: Re-visioning Learning and Change. Schumacher Briefings, n. 6, 2004.

92. Santos, P. R.; Silva, L. M. Recursos pedagógicos para educação ambiental: uma análise no contexto da educação infantil [Pedagogical Resources for Environmental Education: An Analysis in the Context of Early Childhood Education]. Educação e Sociedade, v. 40, p. e188243, 2019.

93. São Paulo. Decreto nº 50.079, de 24 de julho de 1968 [Decree No. 50.079 of July 24, 1968]. Dispõe sobre a constituição do Centro Tecnológico de Saneamento Básico [Provides for the Constitution of the Basic Sanitation Technology Center]. São Paulo: Assembleia Legislativa, 1968. Available at: https://www.al.sp.gov.br/norma/84833 . Accessed on: 9 Aug. 2025.

94. Silva, S. F. Formação de professores para educação infantil: desafios e perspectivas [Teacher Training for Early Childhood Education: Challenges and Perspectives]. Revista Educação em Foco, v. 10, n. 3, p. 85–96, 2006.

95. Świątkowski, W. et al. Interventions promoting pro-environmental behaviors in children: meta-analysis. Journal, 2024. Available at: sciencedirect.com.

96. Talamoni, J. L. B.; Sampaio, R. S. Educação Ambiental: fundamentos e práticas pedagógicas [Environmental Education: Fundamentals and Pedagogical Practices]. São Paulo: Autores Associados, 2008.

97. Tardif, M. Saberes docentes e formação profissional [Teaching Knowledge and Professional Training]. Petrópolis: Vozes, 2002.

98. Tiriba, L. Educação Infantil e natureza: caminhos para uma pedagogia do sensível [Early Childhood Education and Nature: Paths to a Pedagogy of Sensibility]. São Paulo: Cortez, 2005.

99. UNESCO. Education for Sustainable Development in Early Childhood Care and Education (backgrounds and guidelines). UNESCO / OMEP, 200X.

100. UNESCO. Intergovernmental Conference on Environmental Education. Report 20 C/68. Paris: UNESCO, 1978.

101. UNESCO. International Strategy for Action in the Field of Environmental Education and Training for the 1990s. Paris: UNESCO-UNEP, 1988.

102. UNESCO. The International Workshop on Environmental Education. Final Report ED-76/WS/95. Paris: UNESCO; UNEP, 1977.

103. UNESCO. Final Report: Intergovernmental Conference on Environmental Education. UNESCO, 1978.

104. UNESCO. United Nations Decade of Education for Sustainable Development (2005–2014): International Implementation Scheme. UNESCO Publishing, 2005.

105. UNESCO. Education for Sustainable Development Goals: Learning Objectives. UNESCO Publishing, 2013.

106. UNESCO. Incheon Declaration: Education 2030: Towards Inclusive and Equitable Quality Education and Lifelong Learning for All. UNESCO, 2015.

107. UNICEF/UNESCO. Global Report on Early Childhood Care and Education. 2024.

108. United Nations – UN. Agenda 21. New York: United Nations, 1992.

109. United Nations – UN. Convention on Biological Diversity. New York: United Nations, 1992.

110. United Nations – UN. Our Common Future. Report A/42/427. New York: United Nations, 1987.

111. United Nations – UN. Report of the United Nations Conference on Environment and Development. Report A/CONF.151/26/Rev.1 (Vol. I). New York: United Nations, 1993.

112. United Nations – UN. Report of the United Nations Conference on the Human Environment. Report A/CONF.48/14/Rev.1. New York: United Nations, 1973.

113. United Nations – UN. United Nations Framework Convention on Climate Change. New York: United Nations, 1992.

114. United Nations Educational, Scientific and Cultural Organization – UNESCO. Intergovernmental Conference on Environmental Education. Report 20 C/68. Paris: UNESCO, 1978.

115. United Nations Environment Programme – UNEP. About UN Environment Programme. New York: United Nations, 2022. Available at: https://www.unep.org/about-un-environment . Accessed on: 9 Aug. 2025.

116. Vencato, A. Z. et al. Anuário Brasileiro da Soja [Brazilian Soybean Yearbook]. 2010.

117. Veiga, I. Formação continuada de professores: políticas e práticas [Continuing Teacher Education: Policies and Practices]. Educação & Pesquisa, v. 27, n. 1, p. 77–92, 2001.

118. Vygotsky, L. S. A formação social da mente [The Social Formation of Mind]. São Paulo: Martins Fontes, 1998.

119. Vygotsky, L. S. Pensamento e linguagem [Thought and Language]. São Paulo: Martins Fontes, 2008.

120. Wallon, H. As origens do caráter na criança [The Origins of Character in the Child]. Lisboa: Edições 70, 1941.

REALIZATION:


CNPJ: 589029480001-12
contato@aurumeditora.com
(41) 98792-9544
Curitiba - Paraná
www.aurumeditora.com