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Environment, Education, and Identity: Psychological Perspectives on Fostering Ecological Values

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Abstract

This article presents a theoretical reflection on the interaction between the natural environment, education, and the formation of human identity from the perspectives of Environmental Psychology and Educational Psychology. The central objective is to analyze how natural environments influence the construction of psychological identity and the development of ecological values, indicating theoretical and practical implications for the promotion of sustainable identities. The structure of the text is organized into six chapters. It begins with the multidisciplinary relevance of integrating this area of psychology with studies on ecological identity, followed by the presentation of the foundations of the study of person-environment relationships, including place identity theory and emotional bonds with the natural surroundings. Subsequently, the role of natural elements in the construction of self-perception and emotional well-being is analysed, based on an in-depth theoretical review. The formation of ecological values is then discussed, especially in childhood, focusing on the construction of ecological environmental identity, the individual's perception of being an essential part of broader ecosystems, and the impact of environmental education on psychological development. The psychology chapter applied to education emphasizes pedagogical strategies, curriculum development, and educational policies that promote and strengthen ecological identity. Recommendations are presented for educators, psychologists, and policymakers, highlighting the importance of education in building environmental values. The article concludes with a synthesis of the main reflections, highlighting theoretical and practical implications and suggesting paths for future research. This work advances understanding of the relationships between human beings

and natural environments, offering support to professionals in education, psychology, and related fields interested in the construction of ecological values and the development of sustainable educational practices.

Keywords

Environmental Psychology, Ecological Identity, Place Identity, Environmental Education, Educational Psychology, Sustainability

1. Introduction

The relationship between human beings and the natural environment constitutes one of the most complex challenges of today, requiring interdisciplinary approaches that encompass Psychology, Education, Ecology, among other fields. The global environmental crisis and its social repercussions impose on the scientific community the urgency to understand the dynamics that link people to their natural surroundings, especially regarding the formation of human identity and the internalization of sustainable values (Seixas et al., 2020; van Valkengoed & Steg, 2019). Environmental Psychology studies the interaction between individuals and physical and social environments, encompassing not only the impacts on behaviour but also the symbolic and emotional construction of the relationship with nature (Vasconcelos et al., 2022). It recognizes the reciprocity between people and spaces, influencing perception, values, and identity, particularly in the educational context. This approach broadens traditional understanding by valuing the subjective experience of the environment, which shapes pro-environmental behaviour and ecological identity through the meanings attributed to nature. Thus, Environmental Psychology is an essential tool for Environmental Education, promoting sustainable attitudes integrated into the emotional dimension, which are fundamental for addressing contemporary environmental challenges.

Simultaneously, Education plays a central role in the formation of ecological knowledge and values, influencing pro-environmental attitudes and behaviour through formal and non-formal education (Zhang et al., 2025). The integration of environmental education in the school context contributes to the construction of knowledge and practices that stimulate ecological responsibility from childhood. Leal Filho et al. (2025) emphasize that participatory methodologies, interdisciplinary activities, and learning experiences in contact with nature favour the development of pro-environmental attitudes and values. In contrast, traditional approaches centred on textbooks and content transmission still limit the transformative potential of education. The emergence of ecological identity, which positions the individual as an integral part of larger ecosystems, has been recognized as an essential element for engagement in sustainable practices (Marković et al., 2024).

This intersection of psychological, pedagogical, and social issues underscores

the need for theoretical reflections that support effective, scientifically grounded educational interventions (Leal Filho et al., 2025). The topic, therefore, has multidisciplinary relevance, responding to the complexity of contemporary environmental problems and the existing gap in studies that articulate environmental psychological theories and educational practices in the construction of ecological identity (Sterling, 2024).

The present article aims to analyze the interaction between the natural environment, education, and the formation of human identity from the perspectives of Environmental Psychology and Educational Psychology. It seeks to understand how natural environments influence the construction of psychological identity and the internalization of ecological values, highlighting theoretical and practical implications for the promotion of sustainable identities (Pagano et al., 2025), with an emphasis on direct experiences with nature and educational practices oriented towards environmental awareness. Additionally, it is intended to foster scientific discussion on the conceptual foundation and applicability of these approaches within the context of environmental education, contributing to the improvement of policies, pedagogical practices, and formative assessments related to the development of ecological identities and the promotion of pro-sustainability attitudes.

Environmental Psychology emphasizes the dynamic and transactional relationship between people and their environments, recognizing that these spaces are not only physical settings but also bearers of affective, symbolic, and identity meanings (Berze & Dúll, 2024; Vulliermet, 2025). The construction of ecological identity, a key concept of this reflection, involves the individual's perception as part of an integrated natural system, deeply connected with values, emotions, and behaviors (Clayton, 2020).

The importance of this integration is evidenced by the growing body of evidence that a strong ecological identity is associated with pro-environmental behaviors, which contribute to mitigating environmental impacts and promoting collective sustainability (van Valkengoed & Steg, 2019). However, the literature still lacks studies that clearly articulate psychological foundations with educational practices directed towards sustainability, creating a gap between theory and application (Caplow & Hunter, 2024).

Furthermore, the Bioecological model of human development (Bronfenbrenner, 1979) offers a valuable framework for understanding the multiple environmental and contextual influences that shape identity and behaviour, underscoring the need for integrated, multidimensional approaches to environmental education (Yaban & Gaschler, 2025).

This interdisciplinary dialogue is crucial to addressing the complexity of the current environmental problem, marked by interconnected social, economic, and cultural challenges. Thus, ensuring a solid psychopedagogical basis for the formation of ecological identities contributes to the urgent need for behavioral change and the collective construction of more sustainable societies (Leal Filho et al., 2025; Marković et al., 2024).

2. Foundations of Environmental Psychology

Ecological identity refers to an individual's perception of themselves as an integral part of the environmental system, encompassing a sense of belonging, responsibility, and interdependence with nature. This construct integrates personal experiences, cultural values, and environmental learning, guiding pro-environmental attitudes and behaviours (Clayton, 2020; Thomashow, 1995).

2.1. Concepts and Paradigms of Environmental Psychology

Environmental Psychology is an interdisciplinary field that investigates the dynamic and reciprocal interactions between individuals and their physical and social environments, considering behavioral, cognitive, and affective aspects of these relationships (Ceballos-Martinez & Corral-Verdugo, 2025; Yap & Leow, 2024). Originating in the 1960s, based on the ideas of Kurt Lewin, who postulated that behaviour is a function of the person and the environment, the discipline evolved into a transactional paradigm that recognizes the active role of the individual in perceiving, interpreting, and modifying their environment while simultaneously being influenced by it (Williamson & Thulin, 2022).

Cerwén and Hägerhäll (2025) outline six fundamental traits of Environmental Psychology: (1) a Gestalt perspective, which considers the relationship between person and environment in the social context as indivisible; (2) reciprocal and mutable interrelation, emphasizing the constant mutual influence between individual and environment; (3) the connection with Social Psychology, highlighting the role of social contexts in environmental experience; (4) interdisciplinarity, integrating knowledge from ecology, architecture, health, sociology, and psychology; (5) methodological multimodality, combining qualitative and quantitative approaches; and (6) an action-research orientation, aimed at social and environmental transformation.

This theoretical and methodological plurality allows for the analysis of phenomena ranging from environmental perception and urban accessibility to the influence of the environment on mental health, establishing itself as an essential field for environmental education and sustainability. Environmental Psychology also explores the importance of subjective experience and cultural perception of space, considering the environment as laden with symbolic and affective meanings that impact behaviour and quality of life (Vasconcelos et al., 2022).

The integration of different theoretical and methodological perspectives enables the discipline to contribute significantly to urban planning and public policy, promoting environments that support psychological well-being and environmental sustainability, aligning with the principles of environmental education and the formation of ecological identities (Santos & Santos, 2022).

Although Environmental Psychology and Educational Psychology are highly synergistic, the present discussion recognises potential points of tension. Environmental Psychology often emphasises individual processes, such as perception, emotion, and identity, while Educational Psychology tends to focus on systemic,

pedagogical, and contextual approaches that integrate collective learning and social structures. From the perspective of this study, recognising these distinctions provides a more nuanced understanding of how pro-environmental behaviours can be promoted, highlighting both individual mechanisms and the educational or social contexts that facilitate their development.

2.2. Influence of the Natural Environment on Psychological Identity

The natural environment exerts a profound influence on the construction of psychological identity, in accordance with Place Identity theory (Gavilan et al., 2024). Natural environments are internalized in the individual's self-image and cognitive structure, providing feelings of belonging, safety, and existential continuity, which underpin values, beliefs, and behaviors related to environmental conservation (Strandberg & Styvén, 2024).

Environmental internalization is a central process in the formation of ecological identity, a concept that broadens self-perception to include a symbolic and practical connection with the wider natural system (Clayton, 2020). Ecological identity strengthens personal and social engagement in environmental preservation, shaping pro-environmental attitudes and behaviors, and provides support for pedagogical strategies in environmental education that foster lasting bonds with nature (Marković et al., 2024).

In the context of Environmental Education, experiences that promote cognitive and emotional integration with nature are fundamental for developing a critical and active environmental awareness. The promotion of direct and reflective contact with natural environments enables the consolidation of ecological identity and stimulates sustainable engagement throughout life (Zhang et al., 2025).

2.3. Theory of Place Identity

Place identity is defined as the incorporation of a specific place into personal identity through the cognitive, affective, and symbolic associations that the individual establishes with it (Berze & Dúll, 2024). This identity gives meaning to the lived environment and creates affective bonds that influence protective behaviors and commitment to the place.

These bonds are dynamic, changing as physical and social transformations occur, which makes it essential to consider place identity in urban planning and environmental policies (Scannell & Gifford, 2010). Strengthening these bonds contributes to civic participation, social cohesion, and sustainability, creating functional and emotionally welcoming spaces.

Practical applications include participatory strategies that involve communities, encourage environmental care, and support the construction of environments that promote mental health, social resilience, and community integration. This approach reinforces the importance of interdisciplinarity by connecting psychology, education, and urban planning to environmental conservation (Marković et al., 2024; Caplow & Hunter, 2024).

2.4. Emotional State, Affective Bonds, and Restorative Benefits of Natural Places

Natural spaces are much more than mere physical environments; they play a crucial role in promoting emotional well-being and mental health, profoundly impacting people's quality of life. Environmental Psychology highlights the importance of experiences in natural environments for psychological and emotional restoration, with the Attention Restoration Theory (Kaplan & Kaplan, 1989) among the main theoretical foundations supporting this perspective. Direct experiences with natural environments are central for cognitive and emotional restoration and the development of ecological identity.

Recent studies demonstrate that the complexity and biodiversity of natural spaces significantly influence the quality of the experience, making it more immersive and restorative. Environments with a greater variety of plants, animals, and natural elements provide rich sensory stimuli that promote relaxation, emotional balance, and subjective well-being (Bratman et al., 2019; Chang et al., 2024; Hedin et al., 2022). Proximity to and frequency of contact with these spaces are important determinants of psychological health (Meng et al., 2024). Even brief exposure, including simple viewing of natural scenes, can lower blood pressure, heart rate, and muscle tension, contributing to improved mood and reduced negative emotions (Mizumoto et al., 2025).

Natural spaces are also crucial in child development, fostering cognitive, emotional, and social skills through sensory stimulation, creativity, and social interaction (Nguyen & Walters, 2024; Ramsden et al., 2025). Outdoor activities in less structured places, such as parks with trees, rocks, and mud, encourage exploration and imagination, making children more creative and physically active (Ramsden et al., 2025). For individuals with conditions such as Alzheimer's and dementia, exposure to natural environments reduces negative behaviors and increases mobility and confidence (Owen et al., 2024).

In addition to individual benefits, green spaces play a social role as meeting points that strengthen community cohesion, reduce loneliness, and promote collective values of care and sustainability (Jennings & Bamkole, 2019). Urban planning that prioritizes accessible green areas contributes to the promotion of mental health and the sustainable development of cities (Santos & Santos, 2022).

Finally, negative ecological phenomena such as eco-anxiety and solastalgia highlight the depth of emotional engagement with natural places, illustrating that restorative experiences are intertwined with the perception of environmental change and responsibility (Clayton, 2020; Pihkala, 2022; Albrecht et al., 2007).

3. The Role of the Natural Environment in the Formation of Human Identity

3.1. Modelling of Self-Perception and Belonging through Natural Elements

In Environmental Psychology, the relationship between the individual and the

natural environment is recognized as a key element in the process of constructing personal identity. This construction occurs through the internalization of natural spaces within the individual's self, influenced by multiple dimensions, including sensory, cognitive, affective, and cultural experiences (Berze & Dúll, 2024; Clayton, 2020). The concept of ecological identity, a feeling of belonging and integration into the environmental system, becomes central, as it expands the classical scope of personal identity to include the connection with the natural environment. Thus, the environment ceases to be a backdrop and becomes a constitutive part of the self.

Place identity theory describes how direct experience and the symbolic meaning of natural spaces create emotional and cognitive anchors that sustain a sense of continuity and belonging over time (Gavilan et al., 2024; Scannell & Gifford, 2010). Such bonds motivate pro-environmental behaviors and reinforce attitudes of care and preservation, demonstrating the strategic importance of the environment in shaping character and in social action oriented towards sustainability.

Practically, the modelling of ecological self-perception occurs through environmental education programs, community initiatives, and activities involving direct sensory contact with nature, such as interpretive trails, gardening, and planting projects (Vasconcelos et al., 2022). These moments intensify affective connection and expand the environmental symbolic repertoire, broadening the construction of personal and collective meanings related to the environment.

Moreover, cultural aspects profoundly influence these bonds, as different cultures attribute unique values and narratives to the natural environments they inhabit, reinforcing ecological identity in diverse ways (Leal Filho et al., 2025; Yaban & Gaschler, 2025). Environmental education, therefore, should be sensitive to these differences and promote contextualized and interactive approaches that dialogue with the lived experience and worldview of participating groups. It is important to emphasise that constructs such as 'ecological identity' are culturally mediated and may differ significantly from the perspectives found in Indigenous or non-Western worldviews, reflecting the diverse ways in which communities understand the relationship between themselves and the environment (Marković et al., 2024).

The effectiveness of these processes is also conditioned by the quality of interaction and by social and institutional support, which can either enhance or limit environmental internalization. Contemporary research shows that ecological self-perception is an expanding factor in socio-emotional skills, promoting resilience, a sense of responsibility, and empathy for the environment, which are fundamental for advancing sustainable practices and for the construction of environmentally healthy cities and communities (Cerwén & Hägerhäll, 2025).

3.2. Natural Spaces, Meaning, and Emotional Well-Being

While Sec. 2.4 focused on the restorative and affective benefits of natural places, this section emphasises the social and collective dimensions of natural environments.

Natural spaces serve as meeting points that foster community interaction and social cohesion, reinforcing collective values of care and sustainability (Jennings & Bamkole, 2019). Participation in group activities, such as community gardening, school projects, or local conservation initiatives, strengthens both environmental engagement and the emotional and cognitive bonds with nature established through direct experiences.

Urban planning and educational interventions should integrate individual restorative experiences with opportunities for social engagement, ensuring that direct contact with natural spaces translates into personal well-being, collective responsibility, and sustainable community practices. This perspective highlights that, while individual restorative benefits are essential, the social and collaborative dimension amplifies environmental awareness, pro-environmental attitudes, and collective action.

However, the relationship between human beings and the natural environment does not translate only into restorative benefits. The worsening of climate change and environmental degradation has generated emerging psychological phenomena, such as eco-anxiety and solastalgia, which reflect complex emotional responses to contemporary ecological changes. Eco-anxiety is defined as persistent worry accompanied by feelings of helplessness, sadness, and guilt in the face of global environmental threats and the planet's uncertain future (Clayton, 2020). This phenomenon often manifests in individuals with high ecological awareness, potentially affecting mental health and emotional well-being, but also functioning as a driver of environmental engagement and sustainable practices (Pihkala, 2022).

Solastalgia, a concept introduced by Albrecht et al. (2007), describes the feeling of loss, desolation, and emotional displacement caused by the transformation or destruction of the natural environment that once offered comfort and identity. It is a form of "nostalgia without displacement," in which the person suffers from the degradation of their own place, experiencing ecological grief associated with the erosion of the sense of belonging and environmental security (Galway et al., 2019).

These negative experiences highlight the depth of the affective bond between human beings and nature, revealing that emotional well-being depends not only on the restoration provided by natural spaces, but also on their preservation. Thus, it becomes essential to integrate educational, community, and therapeutic approaches that simultaneously promote restorative well-being and emotional resilience in the face of current ecological challenges (Pasquariello et al., 2025).

3.3. Empirical Evidence and Field Studies in Environmental Psychology and Sustainable Development

Environmental Psychology, as an interdisciplinary field, has stood out for its fundamental contribution to understanding human behaviors related to the environment and promoting sustainable development. Recent empirical studies empha-

size that human behaviour does not operate in isolation but is embedded in social, environmental, and cultural contexts that shape individual and collective decisions (Bratman et al., 2019; van Valkengoed & Steg, 2019).

An important line of research indicates that engagement with sustainability programs, such as community gardens, recycling, and conscious consumption, not only benefits the environment but also strengthens psychological well-being and a sense of community among participants (Lopez et al., 2025). This interaction between sustainability and positive psychology reinforces the idea that environmental care is intrinsically linked to human flourishing, promoting a healthier, more resilient, and collaborative society (Carroll et al., 2025).

The UN 2030 Agenda, particularly through the Sustainable Development Goals (SDGs), has added a new dimension to the role of Environmental Psychology, highlighting the importance of practices that ensure responsible production and consumption patterns, in addition to urgent actions against climate change, areas where human behaviour is central (Eloff, 2020). Engagement with environmental policies is driven by psychological processes of motivation, commitment, and group identity, which are essential for long-term sustainability (van Valkengoed & Steg, 2019).

In field studies, the implementation of participatory environmental management strategies, such as Community Councils and environmental education projects, has shown a positive impact on adherence to sustainable practices, enhancing individuals' perception of autonomy and influence over their environment and living conditions (Vasconcelos et al., 2022). The creation of psychosocial indicators to monitor these interventions allows for the assessment of progress toward sustainable models and the effective adjustment of policies (Santos et al., 2019).

Moreover, Environmental Psychology contributes to integrating sustainability knowledge within organizations, strengthening corporate social responsibility and encouraging practices that minimize environmental impact (Foltz et al., 2021). Companies with internal sustainability policies report higher employee satisfaction and engagement, reflecting mutual benefits between a healthy environment and organizational health (Grizante & Ribeiro, 2025).

These advances demonstrate that Environmental Psychology is strategically positioned to address the current challenges of the environmental crisis, proposing approaches grounded in a deep understanding of the relationships between human behaviour and the environment. Based on solid scientific evidence, the discipline can guide educational, community, and policy interventions that promote effective changes for sustainable development and planetary health (Santos et al., 2019).

4. Formation of Values and Ecological Identity

Building on the recognition that constructs such as ecological identity are culturally mediated (Walton & Jones, 2017), it is essential to consider how childhood

and adolescence experiences are shaped by the cultural context, influencing the internalisation of ecological values and the development of environmentally responsible behaviours.

4.1. Influence in Childhood and Formation of Ecological Values

Childhood constitutes a critical period for the formation of ecological values and the development of pro-environmental attitudes that endure throughout life. Contemporary literature emphasizes that early experiences of contact with nature play a decisive role in the construction of affective and cognitive bonds with the environment, fostering ecological empathy and environmental responsibility (Nguyen & Walters, 2024; Ramsden et al., 2025). Environmental Psychology demonstrates that regular exposure to natural environments during childhood promotes the development of socio-emotional skills, such as empathy, cooperation, and a sense of belonging, which in turn shape ecological values (Ceballos-Martinez & Corral-Verdugo, 2025).

Longitudinal studies indicate that children who participate in outdoor activities—such as gardening, exploration of natural spaces, and school sustainability projects—show a greater predisposition to conservation behaviors and responsible consumption in adulthood (Vasconcelos et al., 2022; Zhang et al., 2025). This relationship is explained by Experiential Learning Theory, according to which direct engagement with the environment facilitates the internalization of ethical and ecological values, integrating emotion and cognition in the educational process (Leal Filho et al., 2025). Thus, the development of environmental values does not arise solely from formal instruction but primarily from symbolic and emotional experiences with the natural world.

Bronfenbrenner's Bioecological Model (1979) provides a robust theoretical framework to understand the formation of these values in childhood, highlighting the dynamic interaction between micro (family, school), meso (relations between these contexts), exo (community, media), and macro (cultural and social values) contexts. Yaban and Gaschler (2025) emphasize that, by considering human development as a transactional process, this model allows understanding how environmental education should involve multiple levels of influence, integrating school, family, and community into coherent ecological learning practices.

Furthermore, the educator's role is central as a mediator of ecological experiences and promoter of shared meanings about nature (Caplow & Hunter, 2024). Contemporary environmental pedagogy values participatory and interdisciplinary methodologies that stimulate students' critical reflection and emotional engagement with the environment. The integration of narratives, art, observation, and participatory research enhances the sense of ecological belonging and strengthens ethical commitment to the planet (Marković et al., 2024).

In summary, childhood represents the foundation for the development of ecological values and sustainable behaviors. The promotion of meaningful experiences in nature, supported by integrated, emotionally engaging educational approaches, is an essential strategy for the formation of conscious, responsible citi-

zens committed to environmental and social sustainability.

4.2. Construction of Ecological Identity (Thomashow, 1995)

The concept of ecological identity, introduced by Thomashow (1995), refers to the reflective process through which the individual recognizes themselves as an integral part of the environmental system, developing a sense of belonging, responsibility, and interdependence with the natural environment. This identity emerges from the interaction between personal experiences, cultural values, and environmental learning, translating into pro-environmental behaviors and attitudes sustained by affective and ethical meanings (Santos & Guimarães, 2020).

According to Thomashow (1995), ecological identity is not a static construct, but a process in constant transformation, shaped by experience, education, and self-reflection. The construction of this identity involves three interrelated dimensions: the ecological perception of the self, which recognizes the continuity between individual and nature; critical environmental awareness, which allows understanding the social and political implications of human actions on ecosystems; and ethical responsibility, which guides sustainable and supportive practices (Pagano et al., 2025).

Contemporary research confirms that the development of ecological identity is deeply associated with emotional connection to nature and experiential environmental education. Caplow and Hunter (2024) demonstrate that educational programs integrating science, art, and personal reflection promote the internalization of more substantial and more lasting ecological values, facilitating the integration of cognition, emotion, and action. This integration reinforces what Thomashow (1995) termed the "ecological autobiography", the personal narrative each constructs about their relationship with the environment and which serves as a basis for environmental engagement.

Psychologically, ecological identity acts as a mediator between personal values and environmental behaviour, strengthening commitment to sustainable practices (Pasquariello et al., 2025). This mediation occurs because identification with nature increases the perception of personal and collective efficacy, promoting feelings of ecological agency and planetary belonging (Chen & Hsieh, 2023). Thus, individuals with a strong environmental identity tend to adopt environmentally responsible lifestyles and actively participate in conservation actions and ecological citizenship (Berze & Dúll, 2024).

Environmental education plays a crucial role in this process by providing reflective spaces that stimulate ecological self-exploration and systems thinking. Haryanti et al. (2025b) highlight those active methodologies, such as project-based learning and field experiences, favour the integration of scientific knowledge, emotion, and environmental ethics. Furthermore, immersive and contemplative experiences in nature expand the perception of interconnection among living beings, one of the pillars of ecological identity (Cerwén & Hägerhäll, 2025).

In summary, the construction of ecological identity, as proposed by

Thomashow (1995), constitutes an essential psychological and educational process for sustainability. It promotes the integration of reason and emotion between the individual and nature, guiding the subject towards ethical and reflective action in the contemporary world. The consolidation of this identity requires meaningful experiences with the environment, critical reflection, and pedagogical practices that foster a sense of belonging and co-evolution with the planet (Pagano et al., 2025).

4.3. Environmental Education and Psychological Development

Environmental education goes beyond the transmission of ecological content: it constitutes an agent of psychological development that mobilizes cognition, emotion, and action. Well-designed educational interventions act on the formation of environmental identity, self-efficacy, socio-emotional skills, and social norms that sustain pro-environmental behaviors (Mokhele-Ramulumo et al., 2025). Programs that articulate direct experience with nature, critical reflection, and active participation favour the integration between knowledge and motivation to act, producing effects that go beyond the acquisition of information (Soga & Gaston, 2024).

Experimental evidence indicates that direct contact with nature in educational contexts, designated as nature-contact environmental education, significantly increases pro-environmental attitudes and conservation behaviors; the observed mediating mechanisms include environmental attitudes and sense of responsibility (Zhao et al., 2024).

These findings corroborate the role of sensory and immersive experiences as drivers of lasting change, as they promote affective bonds with the environment that sustain ecological identity and perceptions of personal agency.

Environmental education also operates through central psychological processes: environmental self-efficacy, perceived social norms, and attitudes are pathways that mediate the transition between educational participation and actual behaviour (Yang et al., 2025). Programs that explicitly address practical competence (e.g., waste management projects, school gardens) increase participants' sense of efficacy, a robust predictor of sustained action. Simultaneously, the construction of norms and collective practices within the school and community creates supportive environments that facilitate the maintenance of pro-environmental actions (Biol et al., 2025).

In adolescent development, environmental education has specific effects: frameworks that align pro-environmental actions with youths' motives and values (autonomy, identity, constructive rebellion) amplify behavioral adherence (van de Wetering et al., 2025). Communication and learning strategies that value youth agency and offer volitional choices are more effective than prescriptive approaches, reducing resistance and promoting genuine engagement.

Furthermore, initiatives guided by transdisciplinary research highlight environmental education's simultaneous potential to promote mental health and sus-

tainable behaviour. Multisite protocols that monitor exposure to green spaces and mental representations among urban youth indicate that the frequency and quality of contact with green spaces are related both to well-being and pro-environmental behaviors, with nature-connectedness being a vital mediator (Bubalo et al., 2024). Interventions that combine practical experiences, ethical reflection, and the construction of personal narratives (ecological autobiographies) tend to produce more resilient environmental identities.

Finally, the literature emphasizes the need for continuous and contextualized programs: effective environmental education considers sensitive developmental periods, cultural diversity, and the articulation between school, family, and community, promoting learning that consolidates over a lifetime (da Silva et al., 2025; Merino et al., 2025). In sum, environmental education is a powerful psychological tool: by integrating experiences, skills, and ethical meaning, it fosters identities and capacities that make collective action for sustainability possible.

5. Promotion of Ecological Identity: Educational and Policy Approaches

5.1. Emphasis on Educational Psychology Based on Previous Themes

Educational Psychology constitutes the theoretical and methodological foundation for understanding how learning, development, and socialization processes can be directed towards sustainability and the formation of ecological identity. In light of the previous chapters, it is observed that the development of ecological awareness and environmental values is mediated by complex psychological mechanisms, cognitive, emotional, ethical, and social, which Educational Psychology can integrate into transformative pedagogical practices (Leal Filho et al., 2025; Sterling, 2024).

From this perspective, the focus of Educational Psychology shifts from the mere transmission of knowledge to the integral formation of the individual, valuing meaningful experiences that articulate emotion, cognition, and action. This orientation directly engages with experiential learning theory, according to which genuine learning occurs through reflective interaction between concrete experience and conceptual abstraction (Haryanti et al., 2025a; Kolb, 1984). Thus, the learner is conceived as an active agent in the construction of knowledge and the internalization of ecological values, which reinforces the importance of educational intentionality in promoting sustainability.

Recent studies in educational psychology indicate that learning environments that promote empathy, cooperation, and affective connection with nature are more effective in shaping pro-environmental behaviors (Marchetti et al., 2024; Nguyen & Walters, 2024). These contexts foster the development of socio-emotional competencies, essential for understanding the interdependence between humans and the ecological system. Marchetti et al. (2024) empirically demonstrate that trait emotional intelligence and connectedness with nature predict sustaina-

ble attitudes and behaviors, confirming that ecological learning requires the integration of reason and emotion.

Additionally, research points out that perceptions of instrumentality and time management skills are significant predictors of academic achievement and can support educational practices directed at sustainability (Lourenço et al., 2025).

Furthermore, Educational Psychology provides tools to understand the influence of institutional and socio-cultural contexts on pedagogical practices. Bronfenbrenner's Bioecological approach (Bronfenbrenner, 1979) shows that ecological education is not limited to the school space: it depends on the articulation between family, community, and public policies (Yaban & Gaschler, 2025). Learning thus becomes an ecological process in itself, shaped by multiple levels of interaction and meaning.

Therefore, Educational Psychology, when applied to sustainability, proposes emancipatory ecological education, oriented toward the development of reflective, ethical, and planet-committed identities. It is an educational practice that forms conscious citizens, capable of thinking and acting critically and collaboratively in relation to contemporary environmental challenges (Pagano et al., 2025; Sterling, 2024).

5.2. Educational Interventions for Strengthening Ecological Identity

Educational interventions aimed at strengthening ecological identity are based on the principle that active and emotional engagement with the natural environment is essential to consolidate values, attitudes, and sustainable behaviors. Such interventions go beyond traditional environmental education, integrating the cognitive, affective, and ethical dimensions of learning through an experiential and transformative approach (Caplow & Hunter, 2024).

Effective educational programs in this domain adopt practices that combine experiential learning, critical reflection, and community participation. Recent studies highlight that field activities, school gardening, citizen science projects, and ecological restoration actions strengthen participants' sense of belonging and environmental awareness (Tang et al., 2025; Zhang et al., 2025). These practices foster the development of what Thomashow (1995) called the "ecological autobiography", the personal narrative of one's relationship with nature, which serves as a psychological basis for environmental engagement.

Moreover, interventions that use integrated approaches across art, science, and mindfulness have shown positive results in enhancing connectedness with nature and reducing eco-anxiety among students (Pritchard & Richardson, 2022). By exploring the aesthetic and emotional sensitivity of the individual, these methodologies promote empathy and ecological care, central components of environmental identity. Project-based ecological education, for example, allows learners to perceive themselves as transformative agents within their context, strengthening environmental and self-efficacy agency (Leal Filho et al., 2025).

Interventions can also be structured around Bronfenbrenner's PPCT (Process-

Person-Context-Time) model, which provides a useful framework for understanding the impact of educational experiences throughout human development. Yaban and Gaschler (2025) demonstrate that temporal continuity and coherence across educational contexts (school, family, and community) are determinants for consolidating a solid and lasting ecological identity.

Finally, successful pedagogical strategies incorporate elements of transformative education and socio-emotional learning, recognizing that behavioral change depends on the integration of critical reflection and affective engagement. By promoting meaningful experiences with the environment, these interventions reinforce co-evolution between person and nature, forming citizens committed to planetary care. Thus, strengthening ecological identity is not merely a pedagogical goal but a process of integral human development, supported by practices that unite science, emotion, and environmental ethics (Watt & Frydenberg, 2024).

5.3. Development of Pedagogical and Curricular Strategies

The development of pedagogical and curricular strategies for sustainability requires a paradigm shift in how the educational process is conceived. The integration of principles from Educational Psychology and Environmental Psychology enables the structuring of practices that promote not only ecological knowledge but also the development of critical, emotional, and ethical awareness of the environment. According to Sterling (2024), contemporary education must move beyond a transmissive logic and adopt a transformative model, in which the curriculum becomes a space for co-learning, reflection, and the construction of ecological meaning.

The design of sustainable curricula requires articulation among three dimensions: ecological cognition, environmental emotion, and social action. These dimensions are supported by experiential learning theory and socio-emotional learning, which recognize the role of lived experiences and interpersonal relationships in the formation of attitudes and values (Watt & Frydenberg, 2024). Thus, curricula that involve field projects, artistic practices, nature observation, and participatory methodologies enable students to connect emotionally with the environment and develop a sense of planetary belonging (Pritchard & Richardson, 2022).

Ecological curriculum should incorporate content that awakens ecological identity, stimulating self-reflection and systems thinking (Marković et al., 2024). This approach implies rethinking the role of the educator, who acts as a facilitator of environmental awareness, promoting interdisciplinary dialogues among science, ethics, and aesthetics. In this context, the curriculum is not limited to ecology as a discipline. Still, it becomes transversal across all areas of knowledge, from literature to mathematics, highlighting the interdependence between society and nature.

Recent research also emphasizes the use of digital technologies and immersive narratives as practical tools to strengthen environmental awareness and student

engagement (Haryanti et al., 2025b). Augmented reality, educational games, and virtual laboratories have been used to simulate ecosystems and explore the consequences of human actions on the planet, promoting deeper and more engaged learning.

In practical terms, constructing an ecological curriculum entails a values-based pedagogy in which the development of cognitive and socio-emotional skills aligns with ethical responsibility and civic participation. This curricular integration fosters the formation of critical, empathetic, and committed individuals, actualizing the ideal of education oriented toward the co-evolution of humans and the planet (Zhang et al., 2025).

5.4. Impact of Environmental Psychology on Educational and Social Policies

Environmental Psychology has played an increasing role in the formulation of educational and social policies aimed at sustainability, by providing a deep understanding of the psychological factors that influence human behaviour in relation to the environment. Its integration into public policies allows the identification of cognitive, affective, and contextual determinants that promote, or inhibit, pro-environmental attitudes and civic engagement. This approach contributes to the design of more effective, human-centred strategies that consider the roles of emotions, values, and identities in promoting sustainability (Clayton, 2020; van Valkengoed & Steg, 2019).

The incorporation of Environmental Psychology principles into educational policies has driven the development of curricula guided by ecological awareness and psychosocial well-being. According to Leal Filho et al. (2025), higher education institutions and basic education networks that adopt ecological guidelines integrated with climate justice and social equity objectives achieve more consistent results in terms of behaviour change and community engagement. This approach broadens the notion of citizenship to include ethical, emotional, and planetary dimensions.

At the social level, evidence-based policies informed by Environmental Psychology show that accessible green urban environments promote social cohesion, mental health, and a sense of collective belonging (Hedin et al., 2022; Jennings & Bamkole, 2019). Valuing these spaces helps reduce socio-environmental inequalities, especially in densely populated urban contexts. The creation of parks, community gardens, and outdoor school spaces is an example of initiatives that link environmental policies with educational and public health goals (Bratman et al., 2019).

Additionally, Environmental Psychology has influenced communication and environmental education policies aimed at sustainable behaviour change. Studies show that campaigns appealing to ecological empathy, environmental identity, and perceived self-efficacy are more effective than those centred solely on information or environmental threats (Caplow & Hunter, 2024; Watt & Frydenberg, 2024). Thus, the formulation of educational policies should be grounded in psy-

chological evidence that considers the multiple motivations and barriers to sustainable behaviour.

The integration of Environmental Psychology and public policy, therefore, represents a strategic pathway to address the contemporary environmental crisis. This synergy allows for the development of educational and social programs based on participation, empathy, and ecological justice. By promoting restorative environments and sustainable pedagogical practices, these policies contribute not only to environmental preservation but also to the strengthening of mental health, planetary citizenship, and social cohesion.

5.5. Recommendations for Educators, Psychologists, and Policy Makers

In light of the contemporary ecological and social urgency, it is essential to translate knowledge from Educational Psychology and Environmental Psychology into practical actions and integrated educational policies. The formation of ecological identity and the promotion of sustainable behaviors require joint strategies among educators, psychologists, and policy makers, operating in a coordinated manner at micro (individual and school), meso (community), and macro (educational system and public policy) levels.

5.5.1. Recommendations for Educators

Educators should adopt an experiential and reflective approach, prioritizing participatory methodologies that engage emotion, cognition, and environmental ethics. Activities such as project-based learning, immersions in natural environments, and service-learning are effective in strengthening ecological identity and environmental empathy (Marković et al., 2024; Pritchard & Richardson, 2022). The integration of interdisciplinary practices (art, science, and environmental philosophy) enables students to understand the complexity of interactions between humans and nature, fostering collective responsibility and systems thinking.

One practical application of project-based learning could involve students designing a "Waste Reduction Campaign" within their school. Cognitively, students analyse sources of waste and its environmental impacts; affectively, they reflect on their personal responsibility and connection to the environment; behaviourally, they implement recycling stations, organise awareness events, and monitor results over time. This approach integrates knowledge, emotion, and action, fostering ecological identity and sustainable practices (Merino et al., 2025).

5.5.2. Recommendations for Psychologists

Psychologists, especially educational and environmental psychologists, should support schools and communities in creating healthy, restorative learning environments that foster emotional well-being and ecological resilience. According to Watt and Frydenberg (2024), promoting ecological emotional intelligence, a combination of self-awareness and connection with nature, is crucial for transforming

environmental concern into positive action. Psychosocial interventions that use nature as a therapeutic mediator, such as community gardens and Eco-therapy programs, also demonstrate proven benefits for mental health and environmental awareness (Lopez et al., 2025).

5.5.3. Recommendations for Policy Makers

At the policy level, it is necessary to institutionalize ecological educational practices in national curricula, teacher training, and school infrastructure. Evidence-based policies informed by Environmental Psychology can promote the creation of green schools and sustainable educational cities (Leal Filho et al., 2025). Additionally, psychosocial indicators, such as environmental perception, ecological empathy, and collective well-being, should be integrated into public policy impact assessments, ensuring that sustainability encompasses human and emotional dimensions.

Thus, strengthening ecological identity requires an interdisciplinary alliance between science, education, and policy. Educators shape critical awareness; psychologists facilitate emotional and ethical development; and policymakers create the structural conditions to sustain these changes. This synergy, supported by Environmental Psychology, forms the foundation for the development of regenerative, empathetic, and environmentally just societies (Marković et al., 2024).

6. Conclusions and Future Perspectives

6.1. Synthesis of Findings

The present research consolidated the dialogue between Environmental Psychology and Educational Psychology, highlighting the relevance of ecological identity as a central element in human development and the promotion of sustainability. The concept, introduced by Thomashow (1995), was extensively explored and updated in light of contemporary evidence, demonstrating that ecological identity is constructed through the interaction between cognition, emotion, values, and meaningful experiences with nature.

The previous chapters revealed that the formation of ecological identity begins in childhood and is strongly influenced by direct and affective experiences with the natural environment (Nguyen & Walters, 2024; Ramsden et al., 2025). Early contact with natural environments stimulates empathy, cooperation, and a sense of belonging — socio-emotional competencies that form the basis for pro-environmental behaviors. Environmental Psychology, by emphasizing symbolic and affective bonds with places, and Educational Psychology, by recognizing learning as an emotional and social process, converge in understanding that sustainability must be cultivated from the subject's interiority (Clayton, 2020; Watt & Frydenberg, 2024).

It was observed that educational programs rich in experiential learning, based on participatory and reflective methodologies, strengthen ecological identity and expand environmental agency (Leal Filho et al., 2025; Marković et al., 2024). Like-

wise, pedagogical practices that integrate art, mindfulness, and direct contact with nature produce significant gains in well-being, environmental awareness, and ecological empathy (Pritchard & Richardson, 2022).

Finally, the study demonstrated that educational and social policies grounded in Environmental Psychology principles contribute to healthier school environments and more sustainable communities. Urban green spaces, outdoor schools, and civic participation programs foster social cohesion, mental health, and ecological literacy (Bratman et al., 2019; Jennings & Bamkole, 2019).

6.2. Implications for Comprehensive and Identity-Based Environmental Education

The main implication of this research is the need for a comprehensive environmental education that unites reason, emotion, and ethics—the three axes of integral human development. The construction of ecological identity requires experiences that awaken not only scientific knowledge but also enchantment and sensitivity towards nature.

Educational Psychology provides the foundations for structuring pedagogical practices that promote this integration, recognizing that learning occurs in a contextual, relational, and emotional manner (Sterling, 2024). Environmental Psychology, in turn, reinforces that the environment is an active agent in shaping values and behaviors. When combined, both create an educational paradigm capable of promoting ecological flourishing—the expansion of human potential in harmony with planetary balance (Carroll et al., 2025).

Implementing comprehensive environmental education implies:

- Including the affective and symbolic dimension in curricula;
- Valuing learning in natural contexts;
- Encouraging practices of self-care and care for others and the environment;
- Promoting systems thinking and planetary empathy.

This approach aligns with the Sustainable Development Goals (SDGs), especially SDG 4 (Quality Education) and SDG 13 (Climate Action). The formation of ecological identities enables individuals to recognize themselves as transformative agents and actively contribute to a culture of sustainability and environmental justice (Leal Filho et al., 2025; Yaban & Gaschler, 2025).

6.3. Challenges, Opportunities, and Future Research Directions

Despite advances, significant challenges remain. The first is the gap between theory and practice: although there is consensus on the importance of ecological identity, many educational institutions still operate under fragmented, instructional models. The lack of teacher training in Environmental Psychology and participatory methodologies limits the transformative potential of educational practices (Zhang et al., 2025).

Another challenge is the emotional dimension of the environmental crisis, marked by increased eco-anxiety and feelings of helplessness in the face of climate

change (Clayton, 2020). Educational Psychology must, therefore, develop therapeutic and pedagogical approaches that help students and communities transform anxiety into constructive action and engagement.

There is also a growing opportunity for technological and pedagogical innovation. The use of immersive technologies, such as augmented reality and digital simulations, has shown promise in creating meaningful ecological experiences, allowing students to understand the complexity of natural systems and human impacts (Leal Filho et al., 2025).

In the field of research, it is recommended to explore:

- How long-term psychological and educational interventions shape ecological identity across the life cycle;

- Which cultural and socio-economic factors mediate the relationship between ecological identity and pro-environmental behaviour;

- How public policies can institutionalize ecological and emotionally restorative educational practices.

In terms of educational policy, it is crucial to integrate psychosocial indicators (ecological empathy, sense of belonging, well-being) into impact assessments, so that sustainability is measured not only by environmental outcomes but also by human transformations (Watt & Frydenberg, 2024).

In conclusion, the consolidation of ecological identity, supported by Educational Psychology and Environmental Psychology, represents an essential pathway for the future of education and humanity. This study reaffirms that sustainability begins within the individual, in how they feel, think, and recognize themselves as part of the web of life.

Forming emotionally connected, critically aware, and ethically committed individuals is both the greatest challenge and the greatest opportunity of the twenty-first century. Education that fosters this integration ceases to be merely an instrument of instruction and becomes an act of planetary transformation, towards regenerative, empathetic, and sustainable societies.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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