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Revisión

Pedagogical Practices that Strengthen Eco-Social Responsibility in Educational Institution

Prácticas pedagógicas que fortalecen la responsabilidad ecosocial en instituciones educativas

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Abstract

The contemporary socio-environmental crisis has highlighted the need to reorient educational processes toward the strengthening of ecosocial responsibility through pedagogical practices that integrate ethical, social, and environmental dimensions in student education. The objective of this study was to analyze pedagogical practices that strengthen ecosocial responsibility in educational institutions, identifying their characteristics, didactic strategies, and contributions to the development of attitudes and behaviors committed to social and environmental sustainability. A systematic review was conducted following PRISMA guidelines, analyzing empirical studies published between 2011 and 2025 on pedagogical practices aimed at strengthening ecosocial responsibility across different educational levels. The findings indicate that active, participatory, and experiential pedagogical practices foster the development of ecosocial responsibility by enhancing environmental awareness, ethical commitment, civic participation, and dispositions toward pro-environmental behaviors in formal educational contexts. The review confirms the relevance of ecosocial pedagogical practices as a strategic formative component and underscores the need for their institutionalization through comprehensive educational approaches that articulate ethical, social, and environmental dimensions in response to contemporary socio-environmental challenges.

Keywords: Ecosocial responsibility, pedagogical practices, environmental education, educational sustainability, education for sustainable development.

Resumen

La crisis socioambiental contemporánea ha evidenciado la necesidad de reorientar los procesos educativos hacia el fortalecimiento de la responsabilidad ecosocial, mediante prácticas pedagógicas que integren dimensiones éticas, sociales y ambientales en la formación de los estudiantes. El objetivo de este estudio fue analizar las prácticas pedagógicas que fortalecen la responsabilidad ecosocial en instituciones educativas, identificando sus características, estrategias didácticas y aportes al desarrollo de actitudes y comportamientos comprometidos con la sostenibilidad social y ambiental. Se desarrolló una revisión sistemática siguiendo las directrices PRISMA, analizando estudios empíricos publicados entre 2011 y 2025 sobre prácticas pedagógicas orientadas al fortalecimiento de la responsabilidad ecosocial en diversos niveles educativos. Los hallazgos evidencian que las prácticas pedagógicas activas, participativas y experienciales favorecen el desarrollo de la responsabilidad ecosocial, fortaleciendo la conciencia ambiental, el compromiso ético, la participación ciudadana y la disposición hacia comportamientos proambientales en contextos educativos formales. La revisión confirma la relevancia de las prácticas pedagógicas ecosociales como componente formativo estratégico y subraya la necesidad de su institucionalización mediante enfoques educativos integrales que articulen dimensiones éticas, sociales y ambientales frente a los desafíos socioambientales contemporáneos.

Palabras clave: Responsabilidad ecosocial, prácticas pedagógicas, educación ambiental, sostenibilidad educativa, educación para el desarrollo sostenible.

Introduction

The socio-environmental crisis has increasingly highlighted the interdependence between natural, social, and educational systems, positioning education as a strategic axis for environmental transformation. Phenomena such as climate change, ecosystem degradation, and the widening of social inequalities reveal the limits of current development models and challenge the adequacy of educational approaches focused exclusively on the transmission of technical knowledge (Sterling, 2024). Educational institutions face the challenge of educating individuals capable of understanding the complexity of ecosocial problems and assuming active responsibility for their consequences, integrating ethical, social, and environmental dimensions into their formative processes (Zhou, 2025).

Ecosocial responsibility is conceived as a complex competence that involves recognizing the relationship between human actions, social justice, and environmental sustainability, incorporating an ethical and collective perspective into decision-making. This concept expands traditional environmental education by integrating concerns related to equity, civic participation, and the common good, moving beyond reductionist approaches centered solely on nature conservation (Castro-Carpio & Leal-Díaz, 2023). The literature indicates that the development of this responsibility does not occur spontaneously but requires intentional educational processes that articulate knowledge, values, and practices oriented toward social and environmental transformation (Tilbury, 2011).

From a pedagogical perspective, educational practices play a central role in shaping attitudes, values, and behaviors related to sustainability. Numerous studies have shown that traditional methodologies, based on expository and decontextualized teaching, are insufficient to promote deep and lasting changes in students' relationships with their environment (Corcoran et al., 2017). In contrast, active, participatory, and contextualized pedagogical practices foster meaningful learning by linking curricular content to real-world problems, thereby promoting critical reflection and ecosocial commitment (Kolb, 1984).

Education for sustainable development has consistently emphasized the need to integrate cognitive, socio-emotional, and ethical dimensions into teaching-learning processes. International organizations and recent conceptual frameworks highlight that sustainability cannot be addressed solely through scientific knowledge, but rather requires the development of skills such as empathy, cooperation, systems thinking, and social responsibility (Amprazis & Papadopoulou, 2025).

Educational institutions operate within contexts characterized by profound social inequalities, high environmental vulnerability, and structural limitations that directly affect

educational processes. This situation demands contextualized pedagogical approaches that recognize local realities and promote the active participation of students, teachers, and communities in the construction of relevant ecosocial responses (Elizalde Soto & Elizalde Hevia, 2019).

Empirical evidence on pedagogical practices explicitly oriented toward strengthening ecosocial responsibility in educational institutions within the region remains limited and fragmented, underscoring the need for studies that analyze, systematize, and substantiate such experiences from a rigorous educational perspective.

Within this framework, the objective of this study was to analyze the pedagogical practices that strengthen ecosocial responsibility in educational institutions, identifying their characteristics, didactic strategies, and contributions to the development of attitudes and behaviors committed to social and environmental sustainability.

Methodology

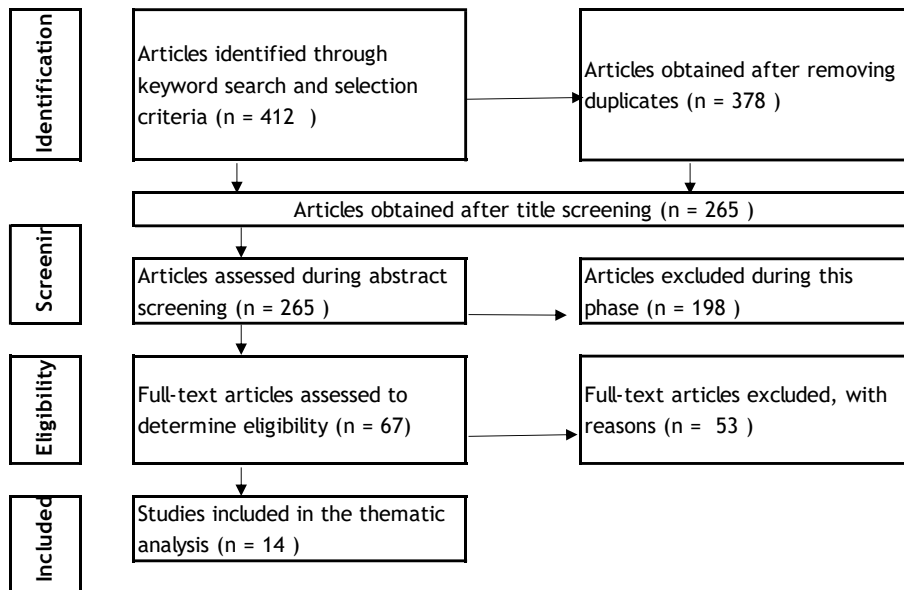
The research was conducted using a systematic review design, responding to the need to identify, evaluate, and synthesize, in a rigorous and reproducible manner, the evidence available in the scientific literature and institutional documents. This approach ensured a transparent methodological process aligned with the objective of the study, without direct intervention in specific educational contexts(Page et al., 2021; Posso Pacheco et al., 2025).

The identification of sources was carried out through a structured search of scientific literature in the Scopus, ERIC, and SciELO databases. Combinations of terms in Spanish and English related to ecosocial responsibility, education for sustainable development, pedagogical practices, environmental citizenship, socio-environmental justice, and experiential learning were used. The search period covered publications from 2011 to 2025, in order to ensure conceptual currency and educational relevance.

The process of identification, screening, eligibility assessment, and inclusion of sources was documented and reported following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines, with the aim of ensuring methodological transparency, clarity in decision-making, and traceability of the review process (Figure 1).

Figure 1

PRISMA flow diagram of the study selection process.



For data extraction, a systematization matrix was developed specifically for this systematic review, allowing the structured recording of the type of pedagogical practice, institutional level or context, formative purpose, didactic strategies employed, roles of teachers and students, links with the community or territory, dimensions of ecosocial responsibility addressed, and the reported contributions in terms of attitudes and behaviors committed to sustainability.

Data analysis was conducted through a process of thematic coding and qualitative synthesis. This process enabled the identification of recurring patterns, as well as convergences and divergences among the pedagogical practices analyzed. Based on the coding process, analytical categories were constructed to facilitate the organization, interpretation, and synthesis of the findings, while maintaining a consistent alignment with the conceptual frameworks of education for sustainable development and ecosocial approaches.

Results

Table 1 presents a synthesis of the studies included in the review, systematizing the identified pedagogical practices, the educational contexts in which they are implemented, and the main reported contributions related to the strengthening of ecosocial responsibility in educational institutions.

Table 1

Studies included on pedagogical practices that strengthen ecosocial responsibility.

Authors	Educational context	Pedagogical practice	Ecosocial dimension addressed	Main formative contributions
(Tilbury, 2011)	Formal educational institutions (primary, secondary, and higher education), with emphasis on school and university contexts linked to Education for Sustainable Development..	Participatory and action-oriented learning, based on students' active involvement in identifying and addressing real socio-environmental problems.	Social and environmental responsibility, civic participation, socio-environmental justice, and collective ethical commitment.	The study shows that participatory pedagogical practices strengthen students' ability to understand the interdependence between social and environmental dimensions, foster critical reflection on the consequences of human actions, and promote attitudes of active commitment to sustainability and social transformation.
(Wals & Benavot, 2017)	Formal education and lifelong learning in contemporary education systems, with emphasis on institutions that incorporate sustainability as a formative	Sustainability-oriented educational approaches that integrate reflective learning, active participation, and problematization of socio-environmental challenges within teaching-learning processes.	Social and environmental responsibility, active citizenship, collective ethics, and understanding of the interdependence between society and nature.	Sustainability-oriented education strengthens students' capacities for critical reflection, ethical commitment, and willingness to act responsibly in response to ecosocial challenges, promoting conscious participation in social and environmental transformation.
(Boström et al., 2018)	Higher education, particularly university programs that integrate sustainability and sustainable development as transversal formative axes.	Interdisciplinary and reflective learning oriented toward sustainability, integrating the analysis of complex social and environmental problems into university learning experiences.	Systems thinking, ethical responsibility, and understanding of the interdependence between social and ecological systems.	Interdisciplinary pedagogical practices strengthen students' capacity to critically analyze ecosocial challenges, reflect on the ethical implications of human decisions, and assume active responsibility for sustainability.
(Ardoin et al., 2020)	Formal and non-formal educational institutions, including school and university education, with programs focused on environmental education and sustainability.	Pedagogical practices based on meaningful educational experiences, situated learning, and students' active participation in real socio-environmental contexts.	Environmental awareness, social responsibility, connection between individual action and collective well-being, and commitment to sustainability.	The study demonstrates that educational practices centered on authentic experiences strengthen understanding of socio-environmental problems, promote responsible attitudes, and encourage students' active involvement in sustainability-oriented actions.

(Chawla & Cushing, 2007)	Formal and non-formal educational contexts related to environmental education, mainly in school and community education.	Participatory and meaningful educational experiences that connect students with environmental and social issues in their surroundings.	Environmental awareness, social responsibility, emotional connection with the environment, and civic engagement.	Meaningful educational experiences strengthen ecosocial sensitivity, ethical awareness, and students' willingness to act responsibly in the face of socio-environmental problems.
(Stevenson et al., 2013)	Formal educational institutions, mainly secondary and higher education, within the field of environmental education..	Critical environmental education based on reflection, dialogue, and students' active participation.	Socio-environmental justice, critical citizenship, ethical responsibility, and reflective thinking.	Critical pedagogical practices foster the development of ecosocial awareness that integrates social, political, and environmental dimensions, promoting responsible attitudes and active participation..
(Monroe et al., 2019)	Formal educational institutions, mainly school and university education, within education for sustainability programs.	Education for sustainability based on active participation, applied learning, and problem-solving related to socio-environmental challenges.	Social and environmental responsibility, responsible decision-making, and community commitment.	Sustainability-oriented educational practices strengthen students' ecosocial commitment and promote responsible behaviors in response to environmental and social challenges.
(Watt et al., 2021)	Teachers (research on teachers' goal orientations; school context).	Does not report a specific pedagogical practice; analyzes teachers' goal profiles from a motivational theory perspective.	Ecosocial responsibility (conceptual dimension linked to professional orientation).	Provides evidence on teachers' goal profiles and their antecedents and consequences, informing teacher training and professional support related to motivation and self-regulation.
(Husin et al., 2025)	Secondary education, public schools.	Environmental Education integrated into the school curriculum, emphasizing transversal integration of environmental content, institutional vision and mission, extracurricular activities, and teacher training in environmental education..	Development of environmental knowledge, pro-environmental attitudes, and expectations regarding the integration of sustainability into school management.	The study documents teachers' expectations for environmental education to be structurally incorporated into the school's vision, curriculum, and activities, promotes values and attitudes conducive to sustainable environmental behaviors, and highlights the importance of teacher training in environmental education.
(Aldawsari et al., 2025)	Higher education, university students from different disciplines in Egyptian universities, enrolled in sustainability- and development-related courses.	Implementation of environmental education explicitly aligned with the Sustainable Development Goals (SDGs), incorporated into university curricula through structured content, guided discussion,	Environmental awareness, individual environmental responsibility, and understanding of the relationship between human development and sustainability.	The study found that SDG-aligned environmental education significantly increased students' environmental awareness and strengthened their sense of responsibility toward environmental issues, demonstrating a statistically robust relationship between environmental awareness and responsible behavior.

		and formative tasks related to real environmental issues.		
(Sass et al., 2025)	Secondary education, students from different schools participating in applied environmental education programs.	Development of educational programs based on the action competence approach, focused on practical activities, environmental problem-solving, and students' active participation in concrete sustainability actions.	Competence for sustainable action, collective responsibility, and active participation in environmental transformation processes.	The study demonstrates that the pedagogical practice strengthened students' capacity to act in an informed and responsible manner in response to environmental problems, increasing willingness to participate in sustainable initiatives and understanding of the impact of individual and collective actions.
(Chen, 2024)	Secondary and higher education, students participating in formal environmental education programs.	Structured environmental education interventions combining theoretical content, practical activities, and guided reflection on the environmental impact of human actions.	Pro-environmental behavior, ecological responsibility, and attitudinal change toward the environment.	The study identified significant changes in students' environmental attitudes and their willingness to adopt ecologically responsible behaviors, positively influencing decision-making related to consumption, environmental care, and social responsibility..
(Khazen et al., 2025)	Initial teacher education, university students enrolled in teacher training programs.	Implementation of a sustainability-focused educational initiative integrated into teacher education, including reflective activities, practical experiences, and analysis of personal and collective ecological footprints.	Environmental attitudes, critical awareness, and disposition toward sustainable action.	Results show strengthened environmental attitudes and greater willingness to act in favor of sustainability, with future teachers developing a deeper understanding of the impact of their practices and the educational role in promoting ecosocial responsibility.
(Mohamed et al., 2025)	Higher education, university students in developing-country contexts.	Educational programs centered on student leadership, collaboration, and environmental education applied to natural resource conservation.	Environmental responsibility, ecosocial leadership, and community engagement.	The study reports that the pedagogical practice strengthened students' environmental leadership and commitment to conservation, with increased participation in collective actions aimed at environmental protection.

The results evidence on pedagogical practices that contribute to strengthening ecosocial responsibility in educational institutions. The studies included encompass diverse educational contexts, ranging from primary and secondary education to higher education and teacher training programs, with a predominance of formal educational settings where sustainability is incorporated as a transversal or explicit formative axis.

Across the analyzed studies, pedagogical practices are characterized by their active, participatory, and experiential nature. Approaches such as action-oriented learning, education for

sustainability integrated into curricula, critical environmental education, and programs based on action competence emerge as recurrent strategies. These practices commonly engage students in the analysis of real socio-environmental problems, encourage reflection on the social and environmental consequences of human actions, and promote participation in collective or community-oriented initiatives.

Regarding the ecosocial dimensions addressed, the studies converge on the development of social and environmental responsibility, environmental awareness, ethical commitment, and understanding of the interdependence between social and ecological systems. Several studies also emphasize dimensions related to civic participation, socio-environmental justice, leadership, and community engagement, particularly in secondary and higher education contexts.

In terms of formative contributions, the reviewed studies report positive impacts on students' attitudes toward sustainability, including increased environmental awareness, greater willingness to engage in pro-environmental behaviors, and strengthened commitment to collective action. In higher education and teacher education contexts, the practices also contribute to the development of leadership capacities, reflective thinking, and a clearer understanding of the educational role in promoting ecosocial responsibility. Overall, the results indicate that pedagogical practices grounded in active participation and real-world engagement are associated with meaningful formative outcomes related to ecosocial responsibility.

Discussion

The findings of this systematic review underscore the central role of pedagogical practices in fostering ecosocial responsibility within educational institutions. The convergence observed across diverse empirical studies suggests that ecosocial responsibility is most effectively developed through educational approaches that actively involve students in learning processes connected to real socio-environmental challenges, rather than through transmissive or purely theoretical instruction.

The prominence of action-oriented and experiential pedagogies aligns with broader educational perspectives that conceptualize sustainability education as a transformative process. By situating learning within concrete socio-environmental contexts, these practices appear to facilitate deeper understanding of the interconnectedness between social justice, environmental sustainability, and individual and collective responsibility. This supports the view that ecosocial responsibility emerges through the integration of cognitive, ethical, and participatory dimensions of learning.

Another relevant contribution highlighted by the reviewed studies is the emphasis on collective and community-oriented dimensions of learning. Practices that incorporate collaboration, leadership development, and engagement with local contexts contribute to moving

sustainability education beyond individual awareness toward shared responsibility and civic participation. This is particularly evident in higher education settings, where leadership-focused and community-linked initiatives strengthen students' capacity to act as agents of social and environmental transformation.

The discussion also points to the importance of institutional conditions in enabling the effectiveness of ecosocial pedagogical practices. Studies indicate that curricular integration of sustainability, alignment with institutional vision and mission, and teacher preparation in environmental education are key factors that support sustained formative impacts. Without such conditions, pedagogical initiatives risk remaining isolated or short-term, limiting their transformative potential.

Taken together, the evidence synthesized in this review contributes to the growing body of research advocating for holistic and context-sensitive approaches to sustainability education. By demonstrating how specific pedagogical practices strengthen ecosocial responsibility across educational levels, the findings offer valuable insights for curriculum design, teacher education, and educational policy aimed at addressing contemporary socio-environmental challenges.

Conclusions

The evidence analyzed confirms that pedagogical practices oriented toward active participation, experiential learning, and engagement with real socio-environmental challenges constitute an effective means of strengthening ecosocial responsibility in educational institutions. These practices promote comprehensive formative processes that integrate knowledge, values, and action, moving beyond educational approaches focused solely on content transmission.

The reviewed studies show that ecosocial responsibility develops more consistently when pedagogical practices integrate ethical, social, and environmental dimensions, fostering a systemic understanding of the interdependence between society and nature among students. This approach contributes to the formation of individuals with heightened critical awareness, collective commitment, and willingness to participate in processes of social and environmental transformation.

The review highlights the need to strengthen the institutionalization of sustainability within educational systems through curricular integration, teacher education, and organizational support for ecosocial pedagogical practices. Advancing in this direction enables the consolidation of educational initiatives with greater formative impact and provides relevant guidance for the design of educational policies and programs committed to addressing contemporary ecosocial challenges.

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