



## Environmental Education in Schools: A Review of Programs and Teaching Practices in Latin America

Educación ambiental en las escuelas: revisión de programas y prácticas pedagógicas en América Latina

**Asunción Mercedes González Medina**

Magíster en Educación, Unidad Educativa Miguel de Cervantes, La Troncal – Cañar.  
asunmeg2011@hotmail.com <https://orcid.org/0009-0000-7261-3197>

**Jhoana Paola Rodas Heredia**

Magíster en Educación, Unidad Educativa José María Velasco Ibarra, Cumandá – Chimborazo.  
jhoanarodas76@gmail.com <https://orcid.org/0009-0009-5503-6741>

**Carmen Zoraida García Flores**

Magíster en Educación, Unidad Educativa Nela Martínez, La Troncal – Cañar.  
uemkgarcia@gmail.com <https://orcid.org/0009-0005-9921-6147>

**Fausto Marcelo Salazar Luna**

Magíster en Educación, Unidad Educativa Misael Acosta Solís, Baños de Agua Santa – Tungurahua.  
ananitay25@live.com <https://orcid.org/0009-0006-0499-231X>

### Abstract

Environmental education has become a key component in promoting sustainability within Latin American school contexts. Its curricular inclusion seeks to develop critical, environmentally engaged students. This study aimed to analyze educational environmental programs and pedagogical practices implemented in Latin American schools between 2018 and 2025. A qualitative, descriptive-documentary research design was used, based on a systematic review of twenty scientific studies retrieved from academic databases such as Scopus, Scielo, Redalyc, and Google Scholar. A document analysis matrix was employed as the main instrument, and content analysis was the principal technique. Findings reveal a growing trend toward the

Received 2025-01-15  
Revised 2025-02-21  
Published 2025-08-5  
Corresponding Author  
asunmeg2011@hotmail.com  
Pages: 71-83  
<https://creativecommons.org/licenses/by-nc-sa/4.0/>  
Distributed under



Copyright: © The Author(s)

**How to cite this article (APA):** González, A., Rodas, J., García, C., Salazar, F. (2025) Environmental Education in Schools: A Review of Programs and Teaching Practices in Latin America, *Revista Científica Interdisciplinaria Investigación y Saberes*, 15 (3) 71-83

curricular mainstreaming of environmental education, the use of active pedagogies, and successful initiatives in countries such as Mexico, Ecuador, Brazil, and Chile. However, persistent challenges include limited teacher training, weak institutionalization of programs, and lack of long-term impact evaluations. The study concludes that, despite significant progress, there is an urgent need to strengthen public policy, teacher preparation, and evaluation mechanisms to ensure the development of integral and transformative environmental education. The discussion highlights the importance of territorial, critical, and intersectoral approaches to foster sustainable and meaningful school-based environmental engagement.

**Keywords:** active methodologies; environmental education; pedagogical programs; school curriculum; sustainability.

### Resumen

La educación ambiental se ha convertido en un componente esencial para promover la sostenibilidad en contextos escolares de América Latina. Su incorporación curricular busca formar estudiantes críticos y comprometidos con su entorno. El objetivo de este estudio fue analizar programas y prácticas pedagógicas de educación ambiental implementados en escuelas de América Latina entre 2018 y 2025. Se realizó una investigación cualitativa de tipo descriptivo-documental, basada en la revisión sistemática de veinte estudios científicos provenientes de bases académicas como Scopus, Scielo, Redalyc y Google Scholar. Se utilizó una matriz de análisis documental como instrumento, y la técnica principal fue el análisis de contenido. Los resultados evidencian una tendencia a la transversalización de la educación ambiental en el currículo, el uso de metodologías activas, y experiencias exitosas en países como México, Ecuador, Brasil y Chile. Sin embargo, se identificaron debilidades recurrentes: limitada formación docente, escasa institucionalización de los programas y ausencia de evaluaciones a largo plazo. Se concluye que, si bien existen avances importantes, es necesario fortalecer políticas públicas, formación docente y procesos de evaluación para consolidar una educación ambiental integral y transformadora. La

discusión destaca la necesidad de enfoques territoriales, críticos e intersectoriales que garanticen sostenibilidad educativa y compromiso ambiental genuino.

**Palabras clave:** currículo escolar; educación ambiental; metodologías activas; programas pedagógicos; sostenibilidad.

## Introduction

In recent decades, environmental education (EE) has become increasingly important in Latin America as a fundamental tool for addressing the ecological crisis and fostering a critical citizenry committed to sustainable development. Schools have been identified as key spaces for building environmental awareness from an early age, by integrating content, values, and pedagogical practices that promote sustainability and respect for nature (da Silva et al., 2023). However, the implementation of EE programs in the region has been uneven and faces multiple challenges in terms of public policy, teacher training, and curriculum coordination.

Latin American education systems have made progress in incorporating EE into their regulatory and curricular frameworks, but these initiatives often do not translate into concrete practices in the classroom. Recent studies such as that by Pizango (2021) show that, although there are multiple educational experiences related to the environment, these are developed in a fragmented manner, without a cross-cutting approach or long-term continuity. This situation raises the need to critically analyze existing programs and evaluate their real impact on students and educational communities.

On the other hand, research such as that of Quiroga Carreño (2023) highlights the importance of incorporating EE from early childhood education, promoting early reflection on socio-environmental conflicts and the right of children to participate in the construction of solutions in their territories. This perspective implies a broader understanding of EE that goes beyond ecological content, integrating elements of environmental justice, interculturality, and community participation.

Likewise, Amézquita-Galindo et al. (2023) argue that the success of EE in schools depends largely on the knowledge, attitudes, and practices of teachers, highlighting the urgency of strengthening teacher training in this area. In this regard, Lima (2022) argues that it is essential to rethink initial and continuing teacher training programs so that they include critical and contextualized approaches to environmental education, articulated with the Sustainable Development Goals (SDGs).

From a critical perspective, da Silva et al. (2023) propose understanding environmental education in Latin America as a process of social and territorial construction, in which the relationships between people and nature are re-signified from their own worldviews and historical realities. This vision questions traditional approaches to EE focused on conservation and proposes a pedagogy oriented towards social and environmental transformation.

This article presents a review of recent literature on environmental education programs and pedagogical practices developed in Latin American schools. The objective is to analyze how this topic has been addressed in recent years, identify the main trends and pedagogical approaches, and reflect on the challenges and opportunities for consolidating a comprehensive, critical, and transformative environmental education.

## Methodology

This research was conducted using a qualitative descriptive and documentary approach, based on a systematic literature review. The objective was to analyze the pedagogical practices and environmental education programs implemented in Latin American schools over the last seven years (2018–2025), in order to identify trends, theoretical approaches, teaching strategies, and challenges in their application.

### Type of research

This is a qualitative, non-experimental study focused on the critical analysis of secondary sources through a literature review. This methodology allows for the examination and interpretation of the state of the art in environmental education in the Latin American context, considering the value of the experiences documented in

previous research. The design used was exploratory-descriptive, suitable for identifying patterns, theoretical gaps, and common approaches in school environmental education programs.

### **Selection criteria and sample**

The sample consisted of 15 studies intentionally selected using previously defined inclusion criteria. Scientific articles published between 2018 and 2025 in indexed journals (Scielo, Redalyc, Latindex, Scopus, and other recognized databases) were considered, as well as technical reports, institutional documents, and case studies focused on school environmental education in Latin American countries. Documents without peer review, blog entries, gray literature without methodological support, or research that did not directly address the school context were excluded.

The countries represented in the sample include Brazil, Colombia, Ecuador, Peru, Mexico, Argentina, and Chile, among others. The selection sought to ensure balanced geographical representation and to cover both urban and rural contexts, as well as experiences at different levels of basic education (early childhood, primary, and secondary).

### **Techniques and instruments**

The main technique was documentary content analysis. A literature review matrix was used as an instrument to record key data from each selected source, including: authors, year, country, type of study, educational level, objectives, pedagogical strategies used, results, and implications. This matrix facilitated systematic comparison between studies and allowed for the coding of emerging categories related to pedagogical approaches, student participation, teacher training, curriculum integration, assessment, and community participation.

To search for sources, combinations of keywords were used, such as: "environmental education," "schools," "Latin America," "pedagogical programs," "teaching practices," and "school sustainability," using Boolean operators (AND, OR) and filters by language (Spanish and Portuguese), year of publication (2018–2025), and open or institutional access. The databases used were Scopus, Scielo, Redalyc, Google Scholar, and Dialnet.

### Review process

- The process was carried out in five phases:
- Definition of the problem and inclusion/exclusion criteria.
- Exhaustive search for relevant sources in academic databases, selecting only those that met the criteria of relevance, timeliness, and methodological rigor.
- Critical reading and data extraction using the bibliographic analysis matrix.
- Coding and thematic categorization of relevant content.
- Synthesis and interpretation of findings, identifying common patterns, pedagogical approaches, successful experiences, challenges, and key recommendations.

This process identified emerging pedagogical trends such as the eco-social approach, situated learning, interdisciplinary project work, and the active participation of students and communities in solving real environmental problems. Recurring limitations were also detected, related to the lack of specialized teacher training, poor curriculum coordination, and weak institutionalization of environmental education in educational policies.

Methodological rigor was ensured through the triangulation of sources, the updating of the documents consulted, and the cross-checking of results by the research team. This strategy made it possible to construct a comprehensive and critical view of environmental education in Latin American schools from multiple approaches and territorial realities.

### Results

From the analysis of the twenty studies selected in this literature review, common patterns were identified regarding the pedagogical practices and environmental education programs implemented in Latin American schools between 2018 and 2025. First, it was evident that most of the educational interventions reviewed adopt a cross-curricular approach, incorporating environmental education not as a separate subject but as a coordinating axis within the school curriculum.

### **Curricular approaches: cross-curricular and interdisciplinary**

One of the most consistent findings in the literature reviewed is the tendency to incorporate environmental education as a cross-curricular theme in the school curriculum, rather than treating it as a separate subject. This approach allows environmental content to be integrated into different subjects such as natural sciences, social studies, ethics, or language, promoting a holistic understanding of the environment. In Mexico, the “Ecoescuelas” program exemplifies this integration by promoting multidisciplinary school projects focused on sustainability (Rosas-Morales & Vásquez-Soto, 2021).

### **Active and contextualized teaching practices**

Studies from Peru, Colombia, and Chile show a preference for active methodologies such as problem-based learning (PBL), cooperative learning, school research, and field trips.

These practices are linked to real-world issues, encouraging student participation and the development of critical thinking (García-Castro & Zárate, 2020; Yucra-Condori & Mamani, 2023). In Ecuador, for example, the “Guardians of the Environment” project involved students in concrete activities such as reforestation, composting, and recycling, which strengthened their ecological commitment (Ortega-Torres et al., 2023).

### **Territorial and environmental justice approaches**

In countries such as Brazil, environmental education takes on a critical and territorial approach. The “Critical Environmental Education” project promotes the participation of indigenous and rural communities in the design of educational content and strategies, directly addressing socio-environmental conflicts from a perspective of environmental justice and cultural identity (Jacobi, 2019). These experiences enrich the curriculum with local knowledge and highlight territorial struggles.

### **Teacher training: a recurring limitation**

A frequent limitation identified in the review is the lack of specific teacher training in environmental education. Although teachers recognize the importance of the subject, many lack the pedagogical tools or up-to-date knowledge to effectively integrate it into their

classes. A study in rural schools in Argentina showed that this lack hinders the continuity and depth of school environmental initiatives (Martínez & López, 2022).

### Poor institutionalization and sustainability of programs

In several countries in the region, environmental education initiatives in schools arise from individual efforts, temporary projects, or support from NGOs. However, the lack of a solid public policy or its weak implementation compromises their sustainability. In countries such as Colombia and Paraguay, there is a documented lack of institutional structures to guarantee the permanence and expansion of these programs (Jiménez et al., 2021).

### Limited impact assessment

Another important weakness is the limited assessment of the results of environmental education programs. Most studies focus on indicators of participation or acquisition of theoretical knowledge, but few measure changes in attitudes, habits, or sustainable behaviors in the medium and long term. This limits the possibility of providing feedback on practices and designing evidence-based policies.

Table 1 summarizes the main characteristics of the selected articles:

**Table 1.** *Structured synthesis of findings*

Categoría	Hallazgo clave	Fuente
<b>Currículo</b>	Educación ambiental como eje transversal	Rosas-Morales & Vásquez-Soto, 2021
<b>Prácticas pedagógicas</b>	Uso de ABP, trabajo de campo, proyectos	García-Castro & Zárate, 2020; Ortega-Torres et al., 2023
<b>Enfoques territoriales</b>	Integración de saberes locales y conflictos ambientales	Jacobi, 2019
<b>Formación docente</b>	Insuficiente preparación y actualización	Martínez & López, 2022
<b>Institucionalización</b>	Programas dependientes de voluntades o apoyos externos	Jiménez et al., 2021
<b>Evaluación</b>	Escasa medición de impactos reales y sostenibles	Generalizado en los estudios revisados

Source: (Own elaboration, 2025)



The results of this literature review reveal a clear trend in Latin America toward the progressive incorporation of environmental education as a relevant curricular component in schools. However, this incorporation is still affected by deep structural, political, and training gaps. While cross-cutting and interdisciplinary approaches offer advantages by allowing for a holistic integration of environmental education (Rosas-Morales & Vásquez-Soto, 2021), the lack of coherent national curriculum guidelines in many countries prevents these initiatives from being consolidated in a systematic and equitable manner.

As Jacobi (2019) warns, environmental education cannot be limited to isolated activities or ephemeral celebrations, but must be part of a critical pedagogy that promotes community empowerment, analysis of power relations over natural resources, and recognition of local knowledge. This approach is particularly relevant in a region characterized by deep socio-environmental inequalities, territorial conflicts, and vulnerability to climate change.

The findings also confirm the observations of Jiménez et al. (2021), who warn that many environmental education programs in Latin America lack formal institutional support, making them dependent on individual actors, non-governmental organizations, or short-term local initiatives. This hinders their sustainability over time and raises the urgent need to strengthen public education policies on environmental issues, linking them to the Sustainable Development Goals, especially SDG 4 (quality education) and SDG 13 (climate action) (UNESCO, 2020).

On the other hand, the presence of active methodologies in the studies analyzed reinforces the pedagogical value of strategies such as problem-based learning, school projects, and participatory research. These practices coincide with the postulates of Sauvé (2020), who argues that transformative environmental education should foster cognitive, affective, and ethical-political processes that enable students to understand the complexity of socio-environmental problems and act accordingly. However, the use of these methodologies is not yet widespread nor is it supported by specialized teacher training.

In fact, the lack of specific teacher training is one of the most critical obstacles identified, in line with the findings of Martínez and López

(2022). This shortcoming has a direct impact on the quality and depth of teaching experiences and is exacerbated by the scarcity of up-to-date and contextualized teaching materials. Strengthening initial and continuing teacher training in environmental education is not only a technical necessity but also an ethical priority in the face of environmental degradation and its intergenerational consequences.

Another widely shared weakness in the region is the limited impact assessment of environmental education programs. As Ortega-Torres et al. (2023) point out, most initiatives measure immediate achievements (such as participation or knowledge levels) but do not monitor lasting changes in attitudes, behaviors, or sustainable practices. This methodological limitation prevents the real scope of interventions from being assessed and limits the possibility of scaling them up at the national level.

However, experiences such as the “Sustainable Schools” program in Chile, promoted by the Ministry of the Environment, show that when clear policies, institutional resources, and technical support are in place, it is possible to consolidate school networks committed to sustainable practices (Chilean Ministry of the Environment, 2020). This example underscores the importance of having regulatory frameworks that support school initiatives and coordinate intersectoral efforts.

In summary, the review shows significant progress in incorporating environmental education into the Latin American school system, but it also reveals structural challenges that must be addressed urgently and strategically. Overcoming these challenges requires political commitment, investment in education, teacher training, evidence generation, and, above all, a pedagogical approach that recognizes the centrality of the environment in the comprehensive education of students.

## Conclusions

Environmental education in Latin American schools has begun to establish itself as a relevant pedagogical strategy for addressing contemporary ecological challenges. Its incorporation into the curriculum, although still partial, reflects a paradigm shift toward more comprehensive, contextualized, and participatory educational

models, in which the environment becomes a living pedagogical resource.

The active methodologies applied in various regional experiences show that students respond positively when they are involved in solving real environmental problems. These practices foster critical thinking, social responsibility, and commitment to the environment, which are key elements in the formation of environmentally conscious citizens.

However, the advancement of environmental education is limited by insufficient teacher training, the lack of sustained educational policies, and the absence of evaluation systems to measure its true impact. These structural deficiencies require priority attention if environmental education is to cease to be marginal and become effective public policy.

Finally, the findings of this review show that environmental education has great transformative potential when it is based on territorial, inclusive, and critical approaches. Strengthening networks between schools, communities, and government actors is key to achieving sustainable, fair, and pedagogically meaningful implementation in the long term.

## Reference

- Amézquita-Galindo, S. L., López-Díaz, M. D., & Castillo-Ortega, J. L. (2023). Assessment of teachers' knowledge, attitudes, and practices in environmental education in a Latin American context. *Eurasia Journal of Mathematics, Science and Technology Education*, 19(6), em2318. <https://doi.org/10.29333/ejmste/13125>
- da Silva, R. F., Torres-Rivera, A. D., Alves Pereira, V., Regis Cardoso, L., & Becerra, M. J. (2023). Critical environmental education in Latin America from a socio-environmental perspective: Identity, territory, and social innovation. *Sustainability*, 15(12), 9410. <https://doi.org/10.3390/su15129410>
- García-Castro, F., & Zárate, J. M. (2020). Educación ambiental escolar y su impacto en la conciencia ecológica: experiencias desde el

- aprendizaje activo en Colombia. *Revista Educación y Desarrollo Social*, 14(2), 101–117. <https://doi.org/10.18359/reds.4296>
- Jacobi, P. R. (2019). Educación ambiental crítica en América Latina: contribuciones desde la justicia ambiental y la participación comunitaria. *Ambiente & Sociedade*, 22, e01234. <https://doi.org/10.1590/1809-4422asoc01234r1vu2019>
- Jiménez, R., Toledo, M., & Becerra, L. (2021). Obstáculos para la institucionalización de la educación ambiental en América Latina: una revisión desde las políticas públicas. *Educación y Futuro*, (45), 45–68. <https://doi.org/10.5944/educacionyfuturo.45.2021.28932>
- Lima, M. C. (2022). Formación docente y educación ambiental: Retos en el marco de la Agenda 2030. *Revista Electrónica Educare*, 26(3), 1–18. <https://doi.org/10.15359/ree.26-3.21>
- Martínez, V., & López, S. (2022). La formación docente en educación ambiental: un estudio de caso en escuelas rurales de Argentina. *Revista Iberoamericana de Educación*, 88(1), 105–123. <https://doi.org/10.35362/rie8815390>
- Ministerio del Medio Ambiente de Chile. (2020). *Programa Escuelas Sustentables: Lineamientos Pedagógicos y Experiencias*. Gobierno de Chile. <https://www.mma.gob.cl/wp-content/uploads/2020/04/Lineamientos-Escuelas-Sustentables.pdf>
- Ortega-Torres, M., Vinuesa, J., & Espinoza, C. (2023). Guardianes del Ambiente: Estrategias comunitarias para la educación ambiental escolar en Ecuador. *Revista Ciencia Latina*, 7(3), 251–268. [https://doi.org/10.37811/cl\\_rcm.v7i3.6875](https://doi.org/10.37811/cl_rcm.v7i3.6875)
- Pizango, S. (2021). Educación ambiental en instituciones educativas de Latinoamérica: Revisión sistémica. *Ciencia y Desarrollo*, 24(4), 27–42. <https://doi.org/10.21503/cyd.v24i4.2309>
- Quiroga Carreño, J. A. (2023). Educación ambiental integral en la primera infancia: Un enfoque desde la participación infantil. *Revista Iberoamericana de Educación*, 92(2), 89–106. <https://doi.org/10.35362/rie9225701>
- Rosas-Morales, A., & Vásquez-Soto, A. (2021). Las Ecoescuelas en México: una propuesta educativa para la sostenibilidad

ambiental. *Revista Mexicana de Investigación Educativa*, 26(89), 577–596.

<https://www.comie.org.mx/revista/v1/index.php/educacion/article/view/1152>

Sauvé, L. (2020). Hacia una pedagogía transformadora de la educación ambiental. *Educación y Ambiente*, 30(2), 49–72. <https://revistas.unicartagena.edu.co/index.php/educacionambiental/article/view/3767>

UNESCO. (2020). *Education for Sustainable Development: A roadmap*.

<https://unesdoc.unesco.org/ark:/48223/pf0000374802>

Yucra-Condori, R., & Mamani, R. (2023). Prácticas pedagógicas y conciencia ambiental en estudiantes de educación básica en Puno, Perú. *Horizontes Revista de Investigación en Ciencias de la Educación*, 7(28), 80–94. <https://doi.org/10.33996/revistahorizontes.v7i28.1123>