

04

LITERACY FOR A LIVING PLANET

Socioecological literacy is foundational for planetary futures.



KEY MESSAGES

- Socioecological literacy is a situated and evolving practice of understanding and acting within the relationships among ecological, social, economic, and political systems across places, scales, and generations. Yet it remains marginal in many education systems.
- Learners need to understand how these systems interact to shape planetary futures; scientific knowledge about climate change, while essential, is not sufficient on its own.
- Learning is embedded in living systems, yet education often separates knowledge from the social and ecological contexts in which it acquires meaning and is put into practice.
- Grounded in place, plural knowledge traditions, and shared purpose, socioecological literacy can help individuals and communities interrogate systems, connect action across local and planetary scales, and co-create more just, adaptive, and regenerative futures.

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INSIGHT

Education systems are increasingly expected to prepare learners to respond to complex, interconnected planetary crises. Yet many dominant approaches to what is commonly described as “climate literacy” remain narrowly focused on scientific knowledge, understanding atmospheric processes, weather patterns, and greenhouse gas emissions. While this knowledge remains necessary, it is not sufficient on its own to prepare learners to navigate planetary change and act responsibly in an interconnected world.

This reflects a broader challenge. In many education systems, dominant understandings of literacy remain largely oriented toward the acquisition of knowledge and information. While reading, writing, and scientific understanding remain essential, they do not in themselves prepare learners to navigate uncertainty, respond to systemic disruption, or act in just ways within complex socioecological systems (Kwauk, 2024). The challenge is therefore not to replace established forms of literacy, but to expand them in ways that enable individuals and communities to flourish under rapidly changing planetary conditions.

This narrowing is not simply a gap in curriculum content. It is reinforced when knowledge is divided across disciplines, learning is detached from lived contexts, and assessment privileges decontextualized individual performance. These arrangements make it difficult for learners to trace relationships among ecological change, political and economic decisions, unequal exposure to harm, and possibilities for collective response. They can also constrain educators who need time, professional autonomy, institutional support, and sustained relationships with communities to work across disciplinary and institutional boundaries. Advancing socioecological literacy therefore requires changes not only in what is taught, but also in how learning is organized, supported, and connected with the world beyond educational institutions.

Global evidence reinforces the need for this broader understanding of literacy. UNESCO’s review of education policies and curricula across 46 Member States found that more than half made no reference to climate change and only 19 percent mentioned biodiversity; where environmental issues appeared, they were often treated cursorily (UNESCO, 2021). At the same time, UNESCO’s *Greening Curriculum Guidance* signals growing recognition of a more holistic approach, calling for climate learning to bring cognitive, social-emotional, and action-oriented dimensions together across formal, non-formal, and informal settings (UNESCO, 2024). Together, this evidence and emerging policy direction point beyond simply adding planetary issues to curricula toward changing how learning about them is understood and organized.

Socioecological literacy is a situated and evolving practice through which people and communities orient themselves within living systems: perceiving relationships, discerning responsibilities, navigating uncertainty, and acting in ways that sustain collective wellbeing across time and scale. It draws on ecological literacy’s invitation to learn to read the living world—not as a backdrop to human activity, but as the web of relationships through which life becomes possible (Orr, 1992; Sterling, 2001; Capra & Luisi, 2014). The term *socioecological* makes explicit that these living relationships cannot be understood apart from the histories, institutions, economies, political arrangements, and unequal relations of power that shape them. It therefore concerns not only how ecological systems function, but also how benefits and harms are distributed, whose knowledge is recognized, how collective decisions

are made, and what responsibilities arise from human participation within living systems. Used here, literacy is not intended to divide people into those who are “literate” and “illiterate,” nor to position experts as transmitting correct knowledge to others. Instead, it emphasizes learning as relational, participatory, and continually developing.

The need for socioecological literacy is both epistemic and practical. Climate change unfolds through interconnected challenges involving energy, food, migration, health, justice, and other dimensions of collective life. Responding requires people and communities to perceive relationships, interpret complex systems, exercise context-sensitive judgment, and engage with possible futures—not as outcomes to be engineered, but as possibilities to be imagined and negotiated collectively (Miller, 2018). Systems thinking, intersectional and futures-oriented inquiry, collaboration, and action are therefore mutually reinforcing dimensions of socioecological agency. Action-oriented pedagogies offer one way of bringing these dimensions together by engaging learners in consequential, community-connected work that links inquiry, collective action, and critical reflection (Thanapornsangst et al., 2025; Weinberg et al., 2024). Grounded in shared responsibility, they create supported and participatory spaces in which learners work alongside educators, communities, and relevant institutions to determine what action is warranted, deliberate across differences, connect local initiatives with wider structural conditions, and reflect on consequences, limitations, and changing circumstances. In this way, agency becomes relational and collective.

Learning, in this sense, is not abstract or decontextualized. It is embedded within socioecological systems—relational networks that include people, places, and more-than-human worlds shaped by interdependence, unequal histories, and continual change (Vossoughi et al., 2023; Westley et al., 2011). Because socioecological conditions differ across places and change over time, responsible action cannot be prescribed through universal solutions. Socioecological literacy develops through sustained attention to how relationships, risks, and responsibilities are configured in particular contexts—and how they change.

Socioecological literacy emerges across the full ecology of learning—lifelong, life-wide, and life-deep—extending beyond formal schooling into communities, workplaces, cultural traditions, and everyday life (Orlovic Lovren, 2022). Within this ecology, knowledge is distributed and situated, developing through participation, interaction, and shared inquiry. As Battiste (2002) argues, this requires a shift from a singular to a relational understanding of knowledge, where learning becomes a process of participation within interconnected, contested, and changing systems.

This reframes literacy itself. Socioecological literacy is not only cognitive but also ethical, political, and relational. It shapes how people and communities interpret change, understand responsibility, and act in just ways within shared systems. It concerns how people, communities, and institutions become answerable for their participation in those systems and mobilize knowledge, experience, ethical judgment, and collective action in support of ecological integrity, social justice, and intergenerational and interspecies wellbeing.

In doing so, socioecological literacy also reframes educational purpose: from preparing individuals primarily to adapt to existing systems toward supporting people and communities in questioning and reshaping the systems that affect their lives. Education becomes a site for interrogating the structural drivers of planetary crises, challenging extractive logics, imagining alternatives, and participating in

collective responses. Learning thus becomes a practice of ethical participation and planetary action, grounded in relational responsibility and enacted through context-responsive, place-based, and community-rooted forms of education.

04 Pathways for transformation

Advancing socioecological literacy requires connecting systems understanding with situated inquiry, collective participation, and ethical action across the full ecology of learning.

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- 01 Organize curricula around socioecological relationships and questions.** Integrate systems, futures, and intersectional thinking across disciplines so learners can examine how ecological, social, economic, and political dynamics interact across places and scales, change over time, and produce unequal consequences under conditions of uncertainty.
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- 02 Ground learning in place, community, and plural knowledge.** Connect learning with local environments, lived experience, community priorities, intergenerational relationships, and more-than-human worlds. Engage Indigenous, local, scientific, experiential, and practice-based knowledge in ways that respect their distinct foundations and the authority of the communities and knowledge holders who sustain them.
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- 03 Advance action-oriented pedagogies through inquiry, participation, and reflection.** Create opportunities for learners to investigate consequential socioecological challenges, deliberate across different perspectives, participate in collective responses, connect local action with wider systems, and reflect critically on the effects and limitations of their actions.
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- 04 Enable educators to lead socioecological learning.** Provide educators with professional autonomy, sustained learning, interdisciplinary planning time, supportive networks, community partnerships, and the material conditions needed to connect learning with changing socioecological realities.

- 05 Build learning ecologies across institutions, generations, and sectors.** Support collaboration among schools, universities, families, communities, workplaces, cultural institutions, social movements, and public agencies, recognizing that socioecological literacy develops throughout life and across formal, non-formal, and informal settings.

The implications of socioecological literacy for recognizing and assessing learning are considered further in Insight 9.

ILLUSTRATIVE PATHWAYS IN PRACTICE

The following examples illustrate how socioecological literacy is already being cultivated across diverse educational contexts. Rather than prescribing a single model, they demonstrate how shared principles can be interpreted and enacted through different knowledge traditions and institutional settings.

Transformative Skills Collaborative: Advancing Climate Literacy Through Inner Skills

The *Transformative Skills Guide*, developed by the Transformative Skills Collaborative, expands climate literacy beyond scientific knowledge alone. It identifies “inner” skills, qualities, and capacities—including self-awareness, resilience, systems thinking, and collaboration—that can help translate understanding into changes in how people act individually and collectively. Designed for educators, communicators, and practitioners, the guide treats climate literacy as more than information acquisition and connects personal reflection and development with collective and systemic climate action.

Learn more

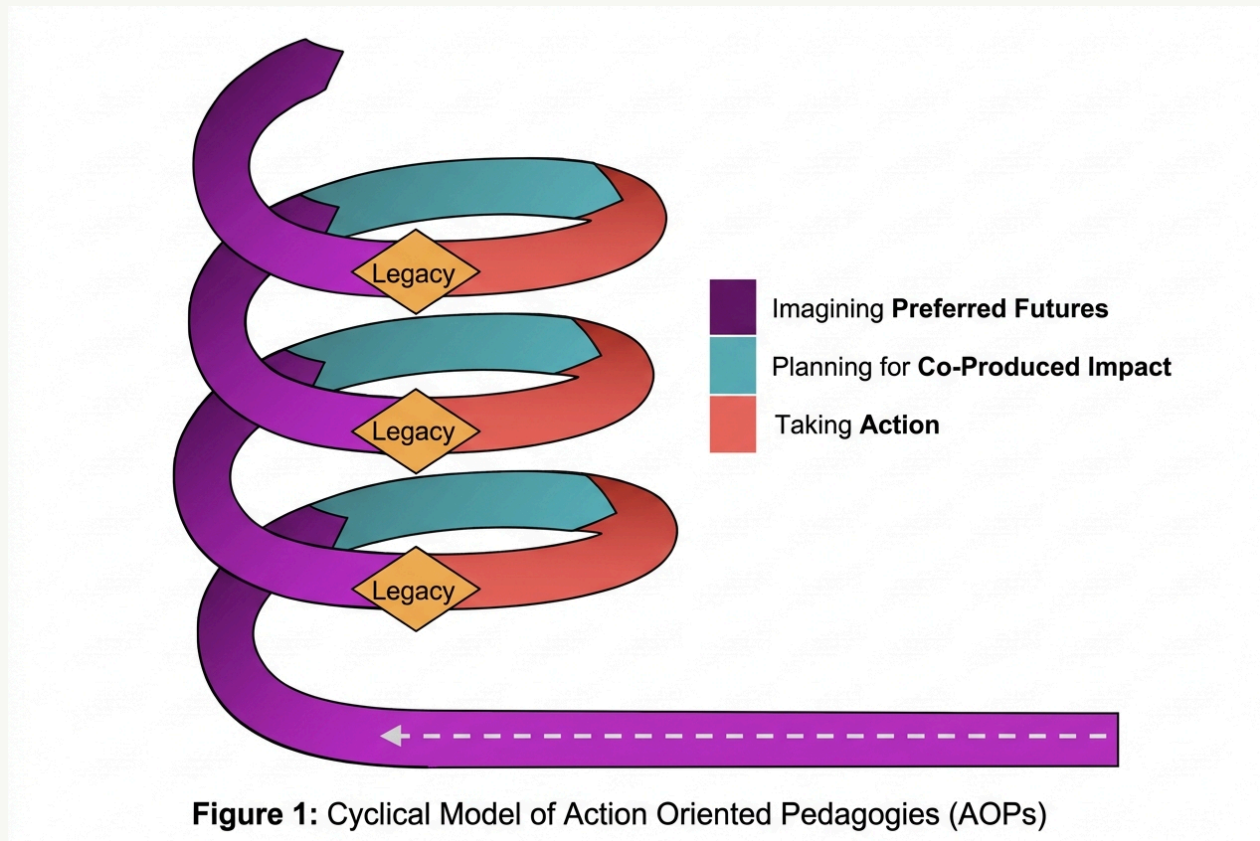
Bodor, S., Bristow, J., Cawood, A., Cofer, J., Crim, H., Dandridge, C., Gonzales, K., Hartley, J., Hendricks, R., Henriquez, A., Iyengar, R., Kwauk, C., Trendell-Nation, M., Niepold, F., III, Simmons, B., Soulen, R., Stevenson, K., Szczytko, R., & Taggart, M. H. (2025). *Transformative skills guide: Expanding the definition of climate literacy*. Transformative Skills Guide Collaborative.

<https://www.climateliteracy.earth/>

Action-Oriented Pedagogies: From Learning About Change to Acting Within It

Across diverse settings, action-oriented pedagogies connect socioecological understanding with meaningful participation in real-world challenges. Two complementary bodies of work demonstrate how this orientation takes shape across different educational and cultural contexts. Drawing on K–12 sustainability education, Weinberg et al. (2024) articulate an Action-Oriented Pedagogies framework that engages students in “real work with real consequences,” bringing inquiry into possible futures together with collective action and critical reflection (see Figure 1). Research involving 28 Regional Centres of Expertise on Education for Sustainable Development across Africa and the Middle East, Asia-Pacific, Europe, and the Americas identifies related practices spanning formal, non-formal, and

informal learning, including engagement with real-world problems, community participation, empathy, cultural and regional relevance, interdisciplinarity, and collaboration (Thanapornsanguth et al., 2025; Insebayeva et al., 2025). One offers a pedagogical framework grounded in K–12 education; the other synthesizes practices emerging across regions, institutions, and community settings. Read together, they show that action-oriented pedagogy is a shared orientation that takes different forms in relation to place, learners, communities, and educational purposes.



Learn more

Thanapornsanguth, S., Park, J., Sato, F. E., Boadie-Ampong, M., Li, S., & Konishi, M. (2025). Action-oriented pedagogies for education for sustainable development and climate action: Insights from Regional Centres of Expertise. *International Review of Education*, 71(5–6).

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Insebayeva, N., Thanapornsanguth, S., Li, S., Park, J., & Mejia, A. Jr. (Eds.). (2025). *Learning for a sustainable future: RCE stories of action-oriented pedagogy*. United Nations University.

Weinberg, A. E., Jordan, M. E., & Jongewaard, R. (2024). “Real work, real consequences”: An action-oriented pedagogies (AOP) framework for sustainability education in K–12 classrooms. *Sustainability Science*, 19(6), 2027–2040. <https://doi.org/10.1007/s11625-024-01560-z>

Morris Area Rural Climate Dialogue: Engaging Adults in Lifelong Socioecological Learning

Using the Jefferson Center's Citizens' Jury method, the Morris Area Rural Climate Dialogues exemplify socioecological literacy as lived, non-formal adult learning. Fifteen randomly selected and demographically balanced residents participated in a three-day process of study and deliberation, hearing different perspectives and examining relationships among changing weather, agriculture, energy, infrastructure, insurance, equity, and community resilience. Rather than receiving information passively, participants identified shared concerns and developed community-based recommendations. The Dialogues demonstrate how deliberation grounded in local knowledge, diverse evidence, and shared purpose can strengthen collective judgment and action in response to complex socioecological challenges.

Learn more

Jefferson Center. (2014). Morris Area climate dialogue final report. <https://jefferson-center.org/wp-content/uploads/2016/10/Morris-Area-Climate-Dialogue-Final-Report.pdf>

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Cultural Reforesting: Cultivating Ecological Literacy Through Art and Place

At Orleans House Gallery in Richmond upon Thames, Cultural Reforesting turns a public gallery and its woodland grounds into a shared environment for ecological inquiry, imagination, and learning. Artists work with scientists, researchers, volunteers, young people, community groups, plants, and the living landscape through residencies, exhibitions, workshops, walks, and participatory research. Their work is organized around a central question: How can we renew our relationship with nature? The initiative demonstrates that ecological literacy involves more than understanding ecological concepts. It also requires learning to notice relationships, engage the senses and emotions, encounter other forms of life with curiosity, and imagine different ways of living together. By connecting artistic practice with ethnobotany, citizen science, community participation, and woodland stewardship, Cultural Reforesting crosses boundaries between art and science, culture and ecology, and learning and public action. It shows how cultural institutions can help people experience themselves not as observers outside nature, but as participants within living systems.

Learn more

Orleans House Gallery. (n.d.). *Cultural Reforesting: How can we renew our relationship with nature?* <https://www.orleanshousegallery.org/cultural-reforesting/cultural-reforesting-how-can-we-renew-our-relationship-with-nature-2/>

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<https://doi.org/10.1007/s11625-024-01560-z>

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