

03

MANY WORLDS, MANY KNOWLEDGES

Indigenous and Earth-based knowledge systems offer vital foundations for regenerating relationships among people, place, and planet.



KEY MESSAGES

- Dominant systems of knowledge and development have often separated human learning from the living Earth, weakening ethical and relational foundations for planetary wellbeing.
- Indigenous and Earth-based knowledge traditions offer diverse, place-based understandings of mutuality—grounded in reciprocity, responsibility, and care—that can support ecological regeneration and social cohesion.
- Education systems can cultivate ecological humility, ethical awareness, and interdependence by learning through sustained and reciprocal relationships with Indigenous and Earth-based knowledge holders.
- Bridging Indigenous, spiritual, ancestral, scientific, and technological knowledge traditions—while respecting their differences, custodial authority, and protocols of knowledge sharing—can support culturally grounded and ecologically responsive ways of living within Earth's limits.

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INSIGHT

The planetary crisis is not only environmental—it is existential. It reflects a deeper rupture between dominant models of human development and the living systems that sustain life. Many modern knowledge systems, shaped by industrialization and the pursuit of economic growth, have reinforced this separation. Within them, some influential scientific paradigms have often privileged prediction, control, and productivity while marginalizing relational, spiritual, and ethical ways of knowing through which communities have understood and sustained their relationships with the natural world. This separation of learning from the living Earth has undermined both ecological integrity and human wellbeing.

These patterns of separation and marginalization have also shaped whose knowledge is recognized, whose authority is acknowledged, and which ways of knowing enter educational institutions. This insight therefore concerns more than introducing relational or ecological content into education: it asks who has the authority to define knowledge, on what terms knowledge may enter educational settings, and what responsibilities institutions assume when engaging with knowledge held by particular communities.

Responding to these intertwined ecological and epistemic ruptures requires rethinking how humanity understands its place and responsibilities within Earth's ecological community. One conceptual resource for this reorientation is Rogers's (1980) idea of organismic wisdom, which describes an embodied orientation toward growth arising from openness to experience. Here, we extend the concept beyond the individual to the adaptive, relational, and regenerative processes through which living systems sustain life. In this expanded ecological sense, organismic wisdom does not imply that ecosystems are always harmonious or naturally balanced. Rather, it directs attention to responsiveness, reciprocity, and interdependence.

Education must therefore shift from the pursuit of mastery over nature toward learning how to participate responsibly within Earth's living systems. This entails repositioning education as a participatory process that recognizes humanity as one participant in an intricate web of planetary reciprocity. Many Indigenous and Earth-based cosmologies have long understood knowledge not as a possession but as a practice of relationship, and learning as carrying ethical responsibilities to sustain the conditions that make life possible. Education pursuing this relational reorientation is therefore indebted to these traditions rather than discovering relationality anew. These traditions are neither equivalent nor reducible to a single understanding of relationship. They arise from distinct histories, communities, places, and responsibilities, including different protocols governing how knowledge is held and shared. Nor can they be reduced to environmental knowledge: they also concern relationships among people, generations, communities, and institutions, including obligations of care, reciprocity, justice, cultural continuity, and collective responsibility.

Across diverse contexts, Indigenous and Earth-based knowledge systems bring ecological observation into relationship with spirituality, ethical reciprocity, and collective responsibility. They offer distinct ways of understanding how human wellbeing is connected with the vitality of living systems. Thich Nhat Hanh's teaching "I have arrived, I am home" expresses dwelling on Earth with awareness as a practice of belonging and responsibility (Nhat Hanh, 2011). This sense of homecoming can cultivate compassion,

ethical restraint, and care, forming an inner foundation for ecological action. Without equating these traditions, this Buddhist account of belonging can be brought into dialogue with particular Indigenous teachings concerned with relational responsibility, reciprocity, and the more-than-human world.

These relational orientations take distinct forms in different communities and places, bringing close ecological observation into relationship with spiritual awareness and collective responsibility. In the forests of South Bengal, elephants are honored as living gods, their presence shaping patterns of coexistence that recognize mutual dependence between species (Green Hub Fellows, 2024a). In Assam, forests are treated as healers, central to both ecological balance and community health (Green Hub Fellows, 2024b). In the Brazilian Amazon, the Kayapó people steward more than nine million hectares of rainforest through governance systems that weave ancestral knowledge, ceremonial practice, and collaboration with scientific partners (Garcia et al., 2024; International Conservation Fund of Canada, 2024). Together, these examples illustrate how cultural relationships and ecological stewardship can reinforce one another in ways that differ fundamentally from purely market-based or technocratic approaches.

Such insights reveal that the work of regeneration is as much cultural and ethical as it is ecological. Education rooted in Indigenous and Earth-based ecologies can make this ethical dimension visible, reconnecting knowledge with the values of reciprocity, restraint, and reverence that sustain life within planetary boundaries. Similar insights arise in spiritual ecology, which understands environmental care as both an inner and outer practice. When learners cultivate mindful awareness—through practices such as breathing with trees, attentive walking, or contemplations of interbeing—they may experience ecological connection as embodied rather than purely abstract. Such experiential practices may complement land- and water-based pedagogies by cultivating presence, gratitude, and relational responsibility. At the same time, their realization depends not only on pedagogy, but also on the availability of safe, biodiverse, and accessible environments. In many urban and marginalized contexts, limited access to green and living systems constrains the possibility of land-based and relational learning, underscoring the importance of spatial justice and supportive infrastructure. These approaches can also bring ecological and planetary dimensions into conversation with social-emotional learning, trauma-informed practice, and relational pedagogy.

Much of this learning already takes place beyond formal education—in families, communities, ceremonial practices, land and water stewardship, and intergenerational knowledge transmission. The question is therefore not simply how schools can incorporate such knowledge, but how formal education systems can support and remain accountable to living knowledge practices without displacing, appropriating, or institutionalizing them on external terms.

Within formal education, these relationships cannot be sustained through curriculum change alone. Teachers and other education professionals play a crucial role in shaping how institutions engage with Indigenous and Earth-based knowledge, but they should not be expected to undertake this work individually or to speak on behalf of knowledge holders. They need professional autonomy, time, sustained learning, appropriate resources, and institutionally supported opportunities to build accountable relationships with custodial communities. Responsibility for ethical engagement must therefore be shared across educators, institutional leaders, policymakers, and the communities whose knowledge is involved.

UNESCO's *Greening Curriculum Guidance* (2024) supports locally grounded, participatory, and action-oriented climate education, including recognition of Indigenous knowledge and approaches relevant to local mitigation and adaptation. Relational, Indigenous, and place-responsive scholarship further emphasizes that re-grounding education begins with restoring relationships. Liu-Nelson (2026), for example, explores finding one's relations with Land, learning collectively, and reconsidering what counts as knowledge through land- and water-responsive pedagogy. This vision resonates with Smith et al. (2019) and Styres (2019), who affirm that knowledge itself is inseparable from place, spirit, and responsibility. Together, these approaches reposition education not as an abstract pursuit of information but as an embodied, relational practice—one that nurtures ecological consciousness, collective responsibility, and the ability to live well within Earth's limits.

Bringing Indigenous and Earth-based knowledge traditions into dialogue with scientific and technological knowledge can contribute to planetary regeneration. This does not mean absorbing Indigenous knowledge into dominant scientific or educational frameworks or treating different traditions as interchangeable. It means creating conditions in which distinct knowledge traditions can meet without being separated from their communities, responsibilities, places, or protocols. Such dialogue must be grounded in ethical partnerships with custodial communities, respect for cultural sovereignty and knowledge-sharing protocols, and community co-governance that guards against extractive or tokenistic inclusion. When relationships among knowledge traditions are ethically governed, they can create a dialogue across difference—one in which data and spirit, measurement and meaning, can be brought into conversation without assigning them exclusively to any one tradition or requiring epistemic convergence. This approach echoes the pluriversal vision articulated by scholars such as Le Grange (2018) and Escobar et al. (2024), who remind us that many worlds—and many ways of knowing—exist within the one Earth system we share.

Education, positioned at this intersection, can become a force of renewal, drawing on the analytical, ethical, relational, and imaginative contributions of multiple knowledge traditions. In this reimagined paradigm, learning becomes a planetary process—an act of reciprocity with the systems that sustain us, where, as Kimmerer reminds us, “all flourishing is mutual” (Kimmerer, 2020, p. 15). That mutuality extends across generations. Drawing on the *Seventh Generation principle*, Rodríguez-Fransen (2025) frames action in the present as a responsibility to safeguard the wellbeing of those yet to come. This principle echoes the growing call for *unitive justice* (Mustakova, 2023) and intergenerational ecological responsibility, grounding education in an ethics of care that extends across time, species, and the web of life itself. Such an education brings Earth system science into dialogue with ancestral and place-based knowledge traditions on terms shaped by and accountable to the communities that sustain them. In doing so, it can help humanity live responsibly within Earth's ecological limits while sustaining the conditions in which human and more-than-human life can flourish.

03 Pathways for transformation

- 01 **Recenter education within Earth's living systems.** Align education goals, curricula, and policies with the principles of reciprocity and regeneration that sustain life within planetary boundaries.
- 02 **Enable Indigenous and Earth-based knowledge systems to shape education on their own terms.** Recognize Indigenous knowledge holders and custodial communities as authorities, co-designers, and co-governors of learning systems; protect cultural and intellectual sovereignty; and respect protocols concerning what knowledge may be shared, how, and with whom.
- 03 **Bridge knowledge traditions through ethical dialogue.** Support community-governed research and practice that bring Earth system science, ethics, spiritual traditions, and Indigenous cosmologies into relationship without requiring epistemic convergence.
- 04 **Enable educators to learn and work alongside Indigenous and Earth-based knowledge holders.** Establish sustained, adequately resourced partnerships in which custodial communities retain authority over what may be shared, how it is interpreted, and how it enters educational settings. Provide teachers and other education professionals with time, preparation, professional autonomy, and institutional support to participate in these relationships, while ensuring that knowledge holders receive appropriate recognition and compensation.
- 05 **Transform learning environments into regenerative ecosystems.** Reimagine schools, universities, and community spaces as living systems that embody care, reciprocity, and interdependence among people, place, and planet.

ILLUSTRATIVE PATHWAYS IN PRACTICE

The following examples illustrate how the pathways outlined above are already being enacted and articulated in diverse cultural and ecological contexts. Rather than serving as models to replicate, they demonstrate how educational transformations can take different forms while remaining grounded in local knowledge, relationships, and priorities.

Orang Suku Laut: Traditional ecological knowledge for climate resilience

The Orang Suku Laut, Indigenous sea people of Indonesia's Riau Islands, have developed rich systems of traditional ecological knowledge through generations of close observation of marine ecosystems. By reading wind patterns, ocean currents, bird and fish movements, tides, and seasonal changes, they anticipate environmental change and adapt their mobility and livelihoods in response to climate-related hazards. Their knowledge integrates ecological observation, cultural beliefs, and adaptive practices, demonstrating that resilience can emerge from long-term reciprocal relationships with the sea alongside—and extending beyond—formal technological forecasting. Today, however, rapid modernization, changing government policies, and environmental degradation threaten both these ways of life and the intergenerational transmission of this knowledge. The Orang Suku Laut demonstrate that climate resilience is cultivated through sustained relationships with place, learning across generations, and reciprocal care for marine ecosystems, offering powerful lessons for education that reconnects learning with ecological stewardship and planetary wellbeing.

Learn more

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Merri Merri Creekulum (Australia): Learning with Country

The Merri Merri Creekulum reimagines schooling by transforming the Merri Merri Creek on Wurundjeri Country into a living classroom where Indigenous knowledge, art, science, and community learning come together. Developed in partnership with the Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation, educators, artists, scientists, and local families, the program is grounded in Care for Country, deep listening, and reciprocal relationships with the more-than-human world. Rather than positioning Indigenous knowledge as an addition to the curriculum, the Creekulum reorganizes learning around Country itself, bringing together multiple knowledge systems while cultivating ecological humility, relational responsibility, and shared stewardship. It demonstrates how education can move from learning *about* the world to learning *with* the world.

Learn more

Merri Merri Creekulum: <https://merri-creekulum.squarespace.com>

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Obal and Budi: Reimagining Planetary Sustainability Through Relational Philosophies

The relational philosophies of *obal* in Kazakhstan and *budi* in Malaysia offer different but resonant ways of reimagining sustainability as an ethical, cultural, and relational practice rather than primarily a technical challenge. They emphasize reciprocity, humility, care, and responsibility to future generations, illustrating that sustainability is learned through relationships with people, place, and the more-than-human world. These philosophies offer reparative visions for higher education by challenging dominant, universalized models of sustainability and recovering locally rooted ways of knowing, being, and learning.

Learn more

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