Policy Brief

DOI: 10.48785/100/380

UNIVERSITY OF LEEDS

Why Revitalising Indigenous Knowledge for Climate Change Education Matters: Insights from Voices of the Rainforest

Syafiq Mat Noor

New research reveals that indigenous children are becoming increasingly climate-vulnerable due to interrelated challenges. Voices of the Rainforest underscores the importance of revitalising indigenous knowledge as a crucial component of effective climate change education. We recommend the adoption of place-based and system-wide approaches to embedding indigenous knowledge in climate change education to strengthen climate resilience not only among indigenous children but also across wider communities and the planet.

The Paris Agreement embeds the notion of intergenerational equity, requiring Parties to act responsibly to ensure that children and future generations inherit a liveable planet. However, despite the growing recognition of indigenous knowledge in climate adaptation and mitigation strategies, indigenous communities – long marginalised notwithstanding their vital role as guardians of the rainforest – remain among the most vulnerable to current and future climate impacts.

Indigenous communities hold reciprocal relationships within the climate–nature–indigenous peoples nexus, reflecting interdependence and shared responsibility for sustaining ecosystems. Voices of the Rainforest grounds indigenous knowledge within this nexus and provides evidence of the communities' strong capacity to adapt to and mitigate climate change. In the rainforest regions of Malaysia, indigenous communities interpret the climate through close observation of the natural world.

Animal behaviours and plant growth patterns, in particular, serve as important indicators of seasonal changes, with every sound, movement, and pattern offering clues to forthcoming seasons or weather shifts – knowledge that is invaluable for adapting to climate change.

For example, the croaks of the Malayan horned frog (*Pelobatrachus nasutus*) during the inter-monsoon period signal that rain or storms are likely to follow with the onset of the northeast monsoon. During the northeast monsoon, which brings heavy and prolonged rainfall, the appearance of the mangrove snake (*Boiga dendrophila*) at specific heights on tree branches indicates the expected level of flooding.

As a sign that the flooding has subsided and the season is shifting back to the inter-monsoon period, the emperor cicada (*Megapomponia imperatoria*) reappears and begins to call.

Such valuable knowledge within indigenous communities may not always be verifiable through conventional scientific evidence, yet it represents generations of careful observation and lived experience of environmental change. However, we found that this knowledge is currently under threat, which could ultimately result in indigenous children becoming increasingly climate-vulnerable. Our analysis indicates three main interrelated challenges.

The diminishing reliance of indigenous communities on rainforest habitats

- The restriction or loss of land rights limits access to traditional territories and learning spaces, disrupting intergenerational knowledge exchange and reducing indigenous peoples' ability to adapt to changing climatic conditions.
- Logging, mining, and forest clearing for development disrupt the ecosystems on which indigenous knowledge depends, displacing wildlife and eroding understanding of ecological patterns vital for anticipating climate shifts.
- Human–wildlife conflict is increasing due to the impacts of climate change and translocation programmes, disrupting indigenous knowledge systems that traditionally guide coexistence with nature and heightening community stress.
- Resettlement initiatives weaken the transmission of indigenous knowledge tied to ancestral lands, diminishing community resilience and increasing children's vulnerability to environmental and climate risks.

The exclusion of indigenous knowledge from school syllabi

- The national syllabus remains disconnected from indigenous culture, language, and daily life, making learning challenging and limiting children's understanding of indigenous knowledge and climate change.
- Many teachers lack sufficient understanding of local indigenous knowledge and climate change, often reducing lessons to simple topics like recycling or weather without deeper context.
- Indigenous knowledge and climate change are largely absent from formal lessons, and when included, they are presented superficially through crafts or language activities without meaningful environmental connections.
- The rigid, centralised structure of the mainstream syllabus leaves little room for local adaptation, preventing teachers from tailoring lessons to children's abilities, interests, and community contexts.
- Ongoing challenges with learning progression and school retention mean that many indigenous children struggle to stay engaged or complete their education, which weakens their ability to compete academically.

The erosion of intergenerational indigenous knowledge

- Children's moderate understanding of indigenous knowledge reflects limited awareness of the natural signs and adaptive practices that elders traditionally used to predict or respond to climate changes.
- Although children can associate the presence of certain animals with specific weather conditions, they often lack a deeper understanding of how these relationships signal broader climatic shifts.
- The decline in the use of local names for plants and animals weakens children's ability to identify species that serve as natural indicators of climate variation, thereby diminishing their ecological and climate literacy.
- While some children recognise that sustainable practices take place in particular seasons, few understand the reasoning behind this timing; the loss of such indigenous knowledge reduces their capacity to adapt resource use to changing climatic conditions.
- As opportunities for elders to share indigenous knowledge – traditionally passed down orally – have diminished, children's exposure to traditional climate knowledge and adaptation practices has become increasingly limited.

Recommendations

- Recognise indigenous knowledge as a fundamental part of climate change education to make learning more relevant, meaningful, and connected to the lived experiences of indigenous children.
- Encourage place-based education approaches rooted in local environments, traditions, and experiences by collaborating with indigenous communities and elders to connect classroom learning with real-world climate and environmental practices.
- Support teachers through professional development that deepens their understanding of indigenous knowledge and climate change, using culturally responsive and contextually relevant approaches.
- Provide schools with adequate resources, community partnerships, and field-based learning opportunities to support the meaningful integration of indigenous knowledge into climate change education.

Further information

Syafiq Mat Noor Lecturer in Climate Change Education in the School of Education, University of Leeds.
Email: **s.matnoor@leeds.ac.uk**

For more information, visit the Voices of the Rainforest website at **https://voicesoftherainforest.leeds.ac.uk**

Research funded by the British Academy ODA International Interdisciplinary Research Projects 2024: Voices of the rainforest: Co-creating a traditional ecological knowledge-based climate change curriculum framework with indigenous communities in Malaysia.

Reference

Mat Noor, M. S. A., Mohd Roslan, R., Mohd Said, H., & Md Johari, M. (2025). Incorporating indigenous and local knowledge (ILK) into a climate change curriculum in Brunei Darussalam. In W. L. Filho, M. Sima, A. L. Salvia, M. Kovaleva, & E. Manolas (Eds.), *University Initiatives on Climate Change Education and Research* (pp. 1-31). Springer. https://doi.org/10.1007/978-3-031-25960-9_99-1

UNIVERSITY OF LEEDS

UNIVERSITI KEBANGSAAN MALAYSIA
National University of Malaysia

The British Academy

Voices of the Rainforest

University of Leeds
Leeds, United Kingdom LS2 9JT

DOI: **https://doi.org/10.48785/100/380**