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Relationality in Indigenous Climate Change Education Research: A Learning Journey from Indigenous Communities in Bangladesh

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Abstract

This article explores my relational learning reflections with the Laitu Khyeng Indigenous community in the Chittagong Hill Tracts (CHT), Bangladesh, focusing on Indigenous perspectives on climate change education. Implementing a relational theoretical framework, I share my reflections on relational learning in this research as part of being accountable to the Indigenous community. Through exploring Indigenous land-based climate change research, five central themes emerge: Indigenous land rights, relationship with the environment, community-led relationality as collaboration, intergenerational relational knowledge and relationality as ethical reciprocity. The findings explore the intrinsic connection between Indigenous communities and their ancestral territories, emphasising the significance of upholding Indigenous sovereignty over land for sustainable adaptation to climate change. In this article, I highlight the importance of relational learning as a form of education, fostering resilience rooted in preserving traditional practices and spaces. Relationality with the environment is central to Indigenous climate education, promoting understanding and reciprocity with the land. In my learning, I learned that community dynamics and collaborative learning are essential for effective climate education, emphasising collective action and diverse perspectives. In relational learning, inter-generational knowledge transmission ensures the preservation and sharing of traditional land-based knowledge across generations, forming the foundation for sustainable adaptation strategies. Ethical engagement and reciprocity guide research interactions, emphasising mutual respect and cultural sensitivity. By centring Indigenous perspectives and knowledge systems, this study advocates for community-led approaches to climate change education, fostering resilience and environmental stewardship within Indigenous communities.

Keywords: Relationality; Indigenous land-based education; Indigenous Elders; rethinking climate change education

Introduction

The exploration of relationality in Indigenous Climate Change Education (ICCE) research is critically significant as it can bridge a critical gap in our understanding of how Indigenous communities worldwide engage with climate change, environmental sustainability and preserving their unique cultural and ecological identities (Datta, 2015; Lange, 2018; Tynan, 2021; Vásquez-Fernández, 2020). Indigenous peoples have historically exhibited an intricate, holistic relationship with their environments, encapsulating wisdom and practices that have endured for generations (Lange, 2018; Tynan, 2021). Identifying and harnessing this relationality is paramount in contemporary climate change research, not only for its potential to inform locally adapted,

contextually relevant and effective climate education strategies but also for its ability to contribute to the global discourse on sustainable, community-centred responses to climate challenges (Tynan, 2021). Focusing on relationality facilitates an acknowledgement of Indigenous worldviews, offering valuable perspectives that can be integrated into broader climate change policies, fostering resilience and advocating Indigenous communities as active partners in pursuing a more sustainable and harmonious education (Gram-Hanssen et al., 2021).

ICCE in Bangladesh is of utmost importance as it plays a critical role in advocating for Indigenous communities to navigate the impacts of climate change while preserving their traditional land-based knowledge (Cajete, 2020; Datta & Datta, 2024; Datta, 2023a, 2023b; Mbah et al., 2021; Muthukrishnan & Datta, 2024; Whyte, 2017). Climate impacts on Indigenous communities in Bangladesh include increased flooding, displacement, loss of traditional lands and disruptions to livelihoods, exacerbating socio-economic inequalities and cultural vulnerabilities (Datta & Kairy, 2024). Identifying and incorporating Indigenous perspectives into climate change education is essential for sustainable adaptation strategies that respect the interconnectedness between Indigenous communities and their environments (Muthukrishnan & Datta, 2024). However, challenges persist, including limited access to educational resources in Indigenous languages, insufficient representation of Indigenous environmental practices in mainstream curricula and the vulnerability of Indigenous populations to the adverse effects of climate change (Nesterova, 2020). Addressing these challenges requires a holistic approach that involves collaboration between Indigenous communities, policymakers and environmental educators to ensure culturally sensitive, community-driven climate change education that not only imparts essential knowledge but also strengthens the resilience of Indigenous peoples in the face of environmental challenges (Petzold et al., 2020).

In the remote and environmentally diverse landscape of the Chittagong Hill Tracts (CHT) in Bangladesh, a unique and crucial learning journey unfolds—deeply rooted in the lived experiences of the Laitu Khyeng Indigenous Community (Datta, 2020a). My decolonial learning journey not only epitomises the community's rich traditions and intricate relationship with the environment but also highlights their remarkable capacity for resilience in the face of a changing climate. Climate impacts on Indigenous communities in the CHT of Bangladesh include heightened vulnerability to extreme weather events, land degradation, loss of biodiversity and threats to traditional livelihoods, exacerbating existing socio-economic disparities and cultural preservation challenges (Datta, 2020a, 2020b). At its core, this article explores the concept of relationality within the realm of ICCE research, specifically focusing on the Laitu Khyeng community's land-based learning perspective. The Laitu Khyeng Indigenous Community, like many other Indigenous groups in the CHT of Bangladesh faces the impacts of climate change, challenging the sustainability of their traditional practices, knowledge systems and ways of life. The Laitu Khyeng Indigenous communities in the CHT of Bangladesh face climate impacts such as increased vulnerability to landslides, erosion and loss of agricultural productivity, threatening their traditional way of life and exacerbating socio-economic challenges. encountered the devastating effects of the severe flood in 2023, highlighting the challenges they confront due to climate change. Yet, this community's approach to climate change education diverges from the dominant narratives that often overlook the significance of Indigenous knowledge, wisdom and relationality with environmental education (Datta, 2018). Instead, the Laitu Khyeng community's decolonial learning journey embodies an interconnectedness with their environment and a commitment to preserving their unique culture, which offers invaluable insights into how ICCE can foster meaningful, contextually grounded responses to climate challenges.

The Laitu Khyeng Indigenous community has made significant strides in recognising the importance of Indigenous knowledge and practices, particularly within climate change adaptation and mitigation (Datta, 2018, 2023b). However, notable research gaps persist, especially in

examining how Indigenous communities, such as the Laitu Khyeng Indigenous Community in the CHT of Bangladesh, actively engage with decolonial learning processes. While a growing body of literature focuses on climate change education and Indigenous knowledge, there is a need for deeper exploration of the interplay between traditional wisdom, community resilience and contemporary climate science in the face of evolving environmental challenges. This article addresses these gaps by illuminating the specific experiences, approaches and lessons of the Khyeng community as a vital contribution to the broader discourse on ICCE. This article also embarks on a journey to unravel the intricate layers of relationality within the Khyeng Indigenous Community's climate change education efforts. It explores how the Khyeng people navigate the complex terrain of climate change, drawing from their ancestral wisdom and forging innovative approaches to sustain their way of life. Throughout this exploration, I explored the intersection of Indigenous knowledge and contemporary climate science, shedding light on the holistic approaches and adaptive strategies the Khyeng community employs to address climate change (Datta, 2019).

While undertaking this relational learning journey as a responsibility, I shared insights regarding the importance of Indigenous worldviews and wisdom within the broader context of climate change education research. By focusing on the experiences of the Khyeng Indigenous community, I intended to contribute to the evolving discourse on relationality, decolonisation and sustainability concerning climate change. Hence, this article stands as a testament to the transformative impact of Indigenous land-based education, the resilience of Indigenous peoples and the enduring significance of acknowledging and honouring the wisdom they impart in our pursuit of a more sustainable and harmonious world.

Researcher positionality

Recognising my position within knowledge production and validation holds significance. It critically influences how a text or discourse is interpreted, comprehended and contextualised. The personal context in which knowledge is generated contributes significantly to constructing meaning (Datta, 2023, 2020; Dei, 2011). In pursuing the questions posed in this article, as Datta, we must acknowledge the impact of our socialisation, identity, education and professional experiences on our understanding of the theoretical framework. My cross-cultural identities, shaped through my experiences of socialisation, education and professional endeavours, have rendered us acutely aware of my vantage point and our responsibilities toward the communities that participate in my research. The act of questioning my own roles as researcher serves as a crucial prerequisite when conducting research within Indigenous communities (Datta, 2018; Smith, 2021; Wilson, 2020).

I was born and raised in a minority family in Bangladesh deeply connected with land-based relational spirituality and learning. Like many other minority families, we have experienced displacement from our land multiple times. Despite our sustainable land-based relational learning practices spanning thousands of years, our education system offered no opportunities to learn about our relational cultivation and land-based practices. Instead, mainstream Western education, which is disconnected from our land-based relationships and traditional practices, was enforced upon us.

The imposition of Western education and colonial spirituality, which prioritises Western beliefs over land-based practices, on land-based communities has had devastating consequences. It has not only perpetuated forced poverty but has also contributed to the human-made climate crisis, resulting in floods, food shortages and pollution. This imposition disregards the wisdom and sustainability inherent in land-based relational learning, leading to ecological and social harm within these communities.

I have personally witnessed the detrimental effects of colonial education on our land-based relational learning, which has led to a disconnection from our local rivers, trees, plants and animals. During my postsecondary and university education, I came to understand how colonial education systematically severed the spiritual relationships that land-based communities had with their land and water. The ongoing imposition of colonial education continues to prioritise the interests of outsider majority groups over those of land-based communities.

This article presents an opportunity for me to reclaim my relationship with the land and its people. Focused on the Laitu Indigenous community, it is a chance to reconnect with our minority land-based relational learning and practices. Despite the specific focus on the Laitu community, their land-based relational learning is deeply intertwined with the experiences and practices of minority land-based communities like mine. Through this article, I aim to honour and revitalise our shared heritage of land-based relational knowledge and reclaim our rightful place within it.

I concur with Wilson (2020) in recognising that research knowledge is inseparable from my identity as a researcher and my objectives. Research, for me, is an exploration of the relationships between myself and my environment, my minority families, my ancestors, our land-based ideas and the cosmos that surrounds us, all of which significantly influence who we are and how we conduct our research.

I am a land-based and decolonial community-based researcher with a strong understanding of decolonial and anti-racist research frameworks. Over 17 years of conducting research with Indigenous and non-Indigenous communities in Canada and South Asia, who has built a network of Indigenous, visible minority immigrants and refugees, as well as Black communities, scholars, students, practitioners and professionals in Canada and beyond. Research is a lifelong commitment. To understand who we are as researchers, it is essential to focus on the facets of our cross-cultural identities, including socialisation, relationships, education and professional experiences, all of which contribute to shaping our identities as researchers.

Theoretical framework

My choice of a relational theoretical framework in ICCE research is grounded in the fundamental understanding that Indigenous knowledge systems are deeply interconnected with the environment, community and cultural practices (Datta, 2015; Lange, 2018; Tynan, 2021; Vásquez-Fernández, 2020). Relational frameworks emphasise the intricate web of relationships that shape Indigenous perspectives on climate change, acknowledging that these perspectives are not isolated but embedded within broader interconnected systems (Smith, 2021; Wilson, 2020). By adopting a relational approach, I aimed to move beyond a reductionist view and recognise the holistic nature of Indigenous knowledge, where ecological, cultural and social dimensions are intricately interwoven (Datta & Datta, 2024, 2020). This framework allowed me to be responsible for learning from the community in a way my learning transforms that community people are educators. I am a learner and researcher who explores how Indigenous communities perceive, adapt to and mitigate the impacts of climate change, considering the relational dynamics between the natural world and cultural practices. Furthermore, I chose a relational theoretical framework that aligns with the principles of reciprocity and interconnectedness inherent in many Indigenous worldviews. It emphasises the symbiotic relationships between humans and the environment, fostering a deeper understanding of how climate change is not merely an environmental challenge but a multifaceted issue with cultural, social and economic implications (Datta, 2023). This approach encourages researchers to engage in meaningful dialogue and collaboration with Indigenous communities, recognising the importance of reciprocal relationships and mutual respect in the research process. Following the relational theoretical framework, I used three following methods:



Figure 1. The Laitu Khyeng Indigenous perspectives on traditional cultivation and the repercussions of climate change, particularly exemplified by the sudden and highly unforeseen flood experienced in July 2023.

Land-based walk with Indigenous elders and knowledge-keepers.¹ A Land-based walk as a relational research method involves a critical journey on the land, guided by Indigenous Elders and Knowledge-keepers (Datta, 2023; Gaudet, 2016; Young, 2015). This relational method recognises the sacred connection between Indigenous peoples and their traditional territories, using the landscape as a dynamic and living archive of knowledge. During the walk, Elders share oral histories, ecological insights and cultural teachings, fostering a deepened understanding of the interconnectedness between the land, culture and Indigenous ways of knowing. This experiential method provides valuable insights into traditional ecological knowledge and emphasises the importance of relationality, allowing researchers to engage with Indigenous perspectives holistically and respectfully (Figure 1). The Land-based walk becomes a reciprocal exchange, honouring the wisdom in the land and promoting a collaborative approach to research that respects and reflects Indigenous worldviews. I went on several walks with Indigenous land-based educators and Elders. In the land walk, they explained what happened. to the land, how it happened and what should happen.

Figure 1 illustrates the Laitu Khyeng Indigenous perspectives on traditional cultivation and the repercussions of climate change, particularly exemplified by the sudden and highly unforeseen flood experienced in July 2023.

¹In the community, the terms Indigenous Elders and Knowledge-keepers are often used interchangeably. Some individuals are recognised as both Elders and Knowledge-keepers, while others known as Knowledge-keepers are also acknowledged as Elders. Both roles hold significant respect within the community.



Figure 2. Deep listening with Indigenous Elders and Knowledge-keepers in Chittagong Hill Tracts (CHT), Bangladesh, in August 2023.

Individual Indigenous land-based stories. Individual Indigenous land-based story listening involves an active engagement with Indigenous Elders and Knowledge-keepers, where narratives are shared in the context of the land itself (Danto et al., 2021). This method acknowledges that stories are not only cultural artefacts but are intimately tied to the land's geography, ecosystems and histories (Young, 2015). By listening to individual stories in the natural environment, researchers gain a deeper understanding of the strong connections between Indigenous peoples and their territories. This approach is grounded in respect for oral traditions and cultural storytelling, providing a space for Elders and Knowledge-keepers to impart wisdom, share experiences and pass down knowledge through narratives intricately woven into the fabric of the land (Datta, 2023). This method thus becomes a transformative research practice for me, fostering a relational and holistic approach that respects the interdependence of stories, landscapes and Indigenous ways of knowing (Figure 2). Through this transformation, I became more responsible for my research and community. Community members also trust me and my environment more in the same process. Therefore, the community considers transformation as relative to each other, which means we are responsible to each other.

Figure 2 shows deep listening with Indigenous Elders and Knowledge-Keepers in the CHT, Bangladesh, in August 2023. Throughout my field research, I diligently documented our conversations, taking detailed notes and recordings. Employing thematic analysis, I identified key themes essential for the community needs, ensuring that the insights of community Elders and Knowledge-keepers were accurately represented. Following this process, they reviewed the material and granted their consent for its use.

Collective land-based stories. Collective land-based stories from Elders and Knowledge-keepers are invaluable repositories of Indigenous wisdom and cultural heritage (Haines, 2022). Collective narratives reflect the unique experiences and deep connections that Elders have with the land, offering insights into personal journeys and the crucial teachings embedded in specific landscapes. In contrast, it weaves together Indigenous communities' shared histories, traditions and ecological knowledge. By grounding these narratives in the context of the land, these stories become living expressions of the interconnected relationship between people and place. Through collective storytelling, Elders and Knowledge-keepers impart a rich tapestry of knowledge that preserves cultural identity and fosters a deeper understanding of the reciprocal relationship between Indigenous communities and their ancestral territories (Bujold et al., 2023).

Using the relational theoretical framework, I enacted the above research methods to showcase the interconnectedness between land-based learning, relationality and environmental sustainability, vital components in addressing the climate crisis. Land-based learning, rooted in Indigenous cultures, fosters a critical connection between land-based learning and environmental sustainability's. By focusing education on the land, communities proposed to develop a holistic understanding of relationality, community self-determination and sustainable practices. Relationality, a core principle in Indigenous worldviews, emphasises the interconnectedness of all living beings and ecosystems. This relational approach promotes a deep sense of responsibility and respect for the environment, encouraging sustainable practices that prioritise the well-being of both human and non-human entities. Embracing these principles in climate change education not only equips individuals with the knowledge to mitigate climate change but also instills a strong respect for the land and community, promoting long-term environmental sustainability rooted in land-based knowledge and practice.

Research ethics and traditional community protocols

In addition to institutional research ethics, I strongly followed Indigenous research ethics and traditional community protocols. In this study, I prioritised the traditional ethical protocols of the communities over institutional ethics, recognising that not all members fully comprehend university ethical standards. Our enduring relationships are built on trust and mutual responsibilities, ensuring that our actions do not negatively impact the community, as we uphold the significance of these meaningful connections. Following community proposals are foundational principles that guided my research endeavours involving Indigenous communities. Indigenous research ethics and traditional community protocols are rooted in respect for cultural sovereignty and self-determination; these ethics prioritise the well-being of the Indigenous community and the protection of sacred knowledge. I had many opportunities to learn from 15 Indigenous Elders, Knowledge-keepers and land-based educators at the Laitu Khyeng Indigenous communities, including at their cultivating land, spiritual land and other sacred lands in the CHT, Bangladesh. I requested Indigenous Elders and Knowledge-Keepers for their guideline, continuous consent and review throughout my July and August 2023 field research. I have strong ongoing relationships with the community from 17 years of work since 2005.

Relational learning findings from Laitu Khyeng Indigenous community in the CHT, Bangladesh

Throughout my engagement in ICCE research, I encountered numerous insights into the multifaceted concept of relationality. In particular, I honed in on five essential themes, guided by the recommendations and guidelines of community Elders and Knowledge-keepers. These themes align with the community's environmental sustainability goals, including Indigenous land rights,

relationship with the environment, community-led relationality as collaboration, intergenerational relational knowledge and relationality as ethical reciprocity. All these are deeply intertwined with their adaptive strategies (Indigenous land rights, traditional land-based education, Indigenous language, traditional cultivations and traditional ceremonies), forming a cohesive and interconnected framework for understanding and addressing climate-related challenges.

Indigenous land rights/land back as climate adaption

Elders and Knowledge-keepers suggested that Indigenous land rights are intrinsic to climate resiliency, embodying an essential connection between Indigenous communities and their ancestral territories. Recognising and protecting these rights serves as a critical foundation for sustainable adaptation strategies in the face of climate change. By upholding Indigenous land rights, communities leverage traditional ecological knowledge and sustainable practices embedded in their relationship with the land, fostering resilience against environmental challenges. For instance, as the community explained recognition and protection of Indigenous land rights in the CHT can empower local communities to implement climate adaptation strategies rooted in traditional knowledge and sustainable land management practices, fostering resilience against environmental challenges and safeguarding cultural heritage. This holistic approach safeguards cultural heritage and reinforces the understanding that preserving Indigenous territories is fundamental to enduring climate resiliency for present and future generations.

Land-based education. Indigenous Elders and knowledge-keepers suggested that “Our land is not just a possession; it is our teacher. Respecting our land rights means recognising its wisdom. Climate resiliency starts with understanding and preserving the lessons embedded in our territories.” (Expressed by Elder 1). Another Elder (Elder 2) suggested that land is a responsibility in education by stating, “Our ancestors were caretakers of this land, and so are we. Upholding our land rights is a duty of guardianship. It is not just about ownership; it is about preserving the balance that sustains us.”

Cultural survival as education. The community considered cultural survival a significant education. For instance, Elder 3 says, “Land rights are the foundation of our cultural survival. To adapt to climate change, we must protect the spaces where our traditions live. Our resiliency is rooted in the landscapes we call home.” Similarly, another Knowledge-keeper -4 said, “Our land rights are intertwined with sustainable practices. Climate resiliency means continuing the practices that have sustained us for generations, living in relationally with the land as our ancestors did.” Elder 5 discussed youth climate change education about interconnected rights, “Land rights are not separate from climate resiliency; they are interconnected. Our ability to adapt is tied to the health of our territories. Recognising and upholding our land rights is a path to a resilient future.”

Therefore, Indigenous land rights, or the call for “Land Back,” represents a potent climate adaptation strategy, recognising that the restoration of ancestral territories is essential for sustainable, community-driven responses to the impacts of climate change. By centring Indigenous sovereignty over land, this approach empowers communities to implement culturally grounded and ecologically sensitive measures, fostering resilience in the face of evolving environmental challenges, including floods, drinking water crises, declining traditional forests, food crises, etc.

Indigenous land-based learning and land rights are critical in climate adaptation due to their intrinsic connection to traditional knowledge and sustainable practices. The Khyeng Indigenous communities, closely tied to their ancestral lands, hold Indigenous land-based wisdom for achieving relationality with the environment. Their land-based education imparts this knowledge and instils a critical sense of responsibility and stewardship toward the land. Therefore, recognising and respecting Laitu Khyeng Indigenous land rights is essential for climate adaptation as it ensures the preservation of ecosystems that are crucial for mitigating climate change’s impacts. Elders and Knowledge-keepers emphasised that securing their land rights would enable

them to impart traditional land-based cultivation practices, conduct land-based ceremonies and ensure food security for future generations, fostering resilience and sustainability against climate crisis within their community. Advocating these rights helps Indigenous communities to self-determine, protect their territories, engage in sustainable resource management and contribute valuable insights to broader climate adaptation strategies, fostering resilience in the face of environmental challenges. Integrating Indigenous land-based education and land-rights perspectives into climate adaptation initiatives is a matter of justice and a pragmatic approach to creating effective, culturally grounded solutions for a more sustainable future.

Relationships with the environment

Relationality in ICCE research emphasises the interconnectedness between Indigenous communities and their natural surroundings. This theme explores how Indigenous knowledge systems view the environment as a holistic entity where ecological, cultural and spiritual dimensions are intricately interwoven.

Deep environmental connection. Relationships with non-humans are significant in climate education. For instance, a knowledge-keeper explained, “In our climate education, we emphasise the interconnectedness with the environment, teaching that our well-being is intertwined with the health of the land. It is not just about survival but about reciprocating with land.” Similarly, another Elder 6 explained it: “Our knowledge comes from the land, and in understanding climate change, we must recognise our deep connection to it. It is not just about the weather but about respecting the land as a teacher.”

Ecosystem as classroom. The community sees their traditional ecosystem as a classroom. For instance, Knowledge-keeper 1 said, “Indigenous climate education imparts the wisdom that our survival depends on understanding the intricate relationships within ecosystems, which is a critical part of climate education. It is about learning from the land itself, acknowledging that every species plays a role in the balance of life.” Another Knowledge-keeper 4 explained that “the relationships are at the heart of our climate teachings. Our education emphasises a cultural ecology that integrates traditional knowledge with scientific understanding, recognising that our cultures have always coexisted with the environment.” Another Elder explained relational teaching in climate education as a guardianship philosophy, “Our climate education instils a guardianship philosophy, teaching that we are stewards of the land. It’s about understanding that our actions impact the environment and recognising our responsibility to protect it for future generations.”

Cultural resilience and adaptation. The concept of relationality underscores the importance of understanding how Indigenous communities draw on their cultural heritage to adapt to and mitigate the impacts of climate change. This theme explores the role of traditional knowledge and practices in building resilience and fostering sustainable responses to environmental challenges. For example, Elder 7 explained, “In our stories and traditions, we find the strength to adapt. Climate change is a challenge, but our cultural resilience is our foundation. We teach our youth to draw strength from who we are.” Another Elder 8 explained the community’s cultural resilience and adaptation education: “In Indigenous climate education, we emphasise cultural resilience as the bedrock of adaptation. Our teachings guide us to draw strength from our traditions, enabling us to weather the storms of climate change.” Similarly, Knowledge-keeper 6 expressed climate education as adaptation through tradition, “Our education instils the understanding that adaptation is not just a response but a continuation of our ancestral practices. Cultural resilience lies in adapting with dignity, rooted in the traditions that have sustained us.”

Cultural education. Community Elders and Knowledge-keepers explained that traditional cultural education is critical for understanding relationships with their environment. Such as Elder 8 says, “Indigenous climate education highlights that our cultural heritage is not just a legacy; it’s a source of strength in the face of environmental challenges. It’s about adapting without losing our

identity.” Cultural education is also suggested as adaptive wisdom. For example, Knowledge-keeper 9 says, “We teach adaptive wisdom in our climate education, emphasising that our cultural resilience lies in our ability to evolve while remaining true to our heritage. It’s about fostering a dynamic balance between tradition and innovation.”

Therefore, effective Indigenous climate education is rooted in nurturing relationships with the environment, guiding individuals to understand their reciprocal connection with the land, fostering ecological awareness and empowering communities to implement sustainable practices for resilient adaptation to climate change. By emphasising these relationships, Indigenous climate education becomes a transformative force, instilling a deep sense of responsibility and respect for the interconnected web of life.

Community-led relationality as collaboration

Relationality extends beyond the individual to the community level, emphasising the significance of collective action and collaboration. This theme explores how ICCE research recognises and respects community dynamics, engaging in collaborative approaches that honour diverse perspectives and promote community-driven solutions. Such as Elder 8 said, “Solutions don’t come from one person; they come from the community. Relationality means working together, sharing our wisdom, and finding collective answers to our challenges.”

Collaborative wisdom. The community sees climate education for community youth is as collaborative wisdom. Knowledge-keeper 7 says, “In Indigenous climate education, we believe in the power of collaborative wisdom. Our teachings emphasise that community dynamics and collaboration are essential for understanding and addressing the impacts of climate change.” Another Elder 5 said, at a similar point, that collaborative knowledge is as shared solutions by saying, “Our climate education encourages shared solutions born from collective insights. It’s about recognising that community dynamics shape our responses to environmental challenges and that collaboration is the cornerstone of effective climate resilience.”

Community-led action. Multiple ways of knowing from the community is a community-led action for the community. Such as Knowledge-keeper 2 said, “Indigenous climate education underscores the importance of community-led action. It teaches that meaningful change arises when community dynamics are respected and individuals come together to collectively address the ecological challenges we face.” Another Elder 4 says collaborative learning can bring interconnected solutions, “We teach in our climate education that solutions are interconnected, mirroring the interdependence within our communities. It’s about fostering collaboration, acknowledging diverse perspectives, and finding strength in collective efforts.” Similarly, another Elder 6 says collaborative learning can create unity within youth and community by saying, “Our education instils the understanding that unity is fundamental for climate resilience. It emphasises that by working together, communities can navigate the complexities of climate change, ensuring a shared, sustainable future.”

Therefore, community dynamics and collaborative learning are pillars of effective climate education. They foster a shared understanding of environmental challenges and empower communities to develop context-specific, resilient solutions. By embracing diverse perspectives and pooling collective wisdom, these approaches enhance the efficacy of climate education and inspire a sense of shared responsibility and community-driven action toward sustainable adaptation.

Intergenerational relational knowledge

Indigenous communities often strongly emphasise passing down relational knowledge from generation to generation. Relationality in this context examines how ICCE research facilitates the intergenerational transmission of ecological wisdom. This ensures that traditional knowledge

continues to inform responses to contemporary environmental changes. For example, Knowledge-keeper 8 says, “Our ancestors left us teachings about living in relationally with land. Passing down this wisdom is not just a choice; it is a responsibility.” Similarly, the community strongly emphasises the intergenerational transmission of knowledge, recognising that wisdom passed down through generations forms the bedrock of sustainable adaptation. As another Knowledge-keeper 7 highlighted, this commitment to passing on ecological insights is integral to Indigenous climate education: “Our youth must know how to protect what sustains us, and that knowledge comes from the stories and experiences of our Elders.”

Through storytelling and experiential learning, Indigenous climate education ensures that traditional knowledge about weather patterns, land stewardship and adaptation strategies is preserved and actively shared across generations. As one community leader-1 expressed, “Our climate education is a dialogue between the wisdom of the past and the curiosity of the future,” reflecting intergenerational knowledge transmission’s dynamic and reciprocal nature. Thus, this intergenerational learning approach imparts valuable skills for navigating environmental changes and fosters a deep sense of cultural identity and continuity, ensuring that the resilience embedded in ancestral wisdom remains a guiding force for future generations.

Relationality as ethical and reciprocity

This theme centres on the ethical considerations inherent in relational research with Indigenous communities. It explores how researchers engage with communities in a manner that upholds principles of reciprocity, mutual respect and cultural sensitivity. This includes recognising the importance of informed consent, acknowledging traditional protocols and ensuring that research outcomes benefit the community meaningfully. A Knowledge-keeper 4 says, “Research is a relationship, and relationships require respect. Engaging with our community for climate research means honouring our protocols, seeking permission, and ensuring our knowledge is used with integrity.”

Indigenous climate education is deeply rooted in ethical engagement and reciprocity principles, embodying a commitment to respectful collaboration and acknowledging the interconnected responsibilities between researchers and communities. As one Elder 10 emphasised, “Research is a relationship, and relationships require respect.” This sentiment emphasises the importance of approaching Indigenous climate education with a critical sense of responsibility and cultural sensitivity. Similarly, a Knowledge-keeper 8 articulated the significance of ethical engagement, stating, “Engaging with our community for climate research means honouring our protocols, seeking permission, and ensuring our knowledge is used with integrity.” This emphasis on ethical conduct reflects a broader commitment to reciprocity, recognising that the benefits derived from research efforts must reciprocate positively within the community. Indigenous climate education, therefore, becomes a two-way exchange; as a community member expressed, “Our knowledge is shared willingly, but it comes with an expectation of reciprocity. It is about mutual respect and ensuring that research outcomes contribute positively to our community’s well-being.” This ethical framework upholds the integrity of Indigenous knowledge and cultivates enduring partnerships between researchers and communities, fostering a shared commitment to environmental stewardship and cultural preservation.

Discussion and conclusion

In focusing on the discourse surrounding Indigenous relationality in climate education, the discussion underscores a fundamental shift toward a more interconnected and holistic approach. The majority of Elders and Knowledge-keepers advocated for making Indigenous land-based learning on climate education accessible to everyone, encompassing youths, children and leaders. This inclusive approach aims to reclaim Indigenous land-based knowledge and practices across

diverse age groups and community roles. The voices of Indigenous Elders and Knowledge-keepers resonate throughout, emphasising the intricate web of relationships between people, the environment and cultural practices. This relational framework in climate education imparts knowledge and embodies a philosophy deeply rooted in respect for Indigenous land rights, community collaboration and intergenerational wisdom.

Indigenous land-rights as Indigenous sovereignty and self-determination as climate response. Indigenous land rights, or the call for “Land Back,” is a critically impactful component of climate adaptation education due to its intrinsic connection to cultural resilience and environmental sustainability (Datta, 2023; Racehorse & Hohag, 2023; DeLancey, 2023). This article also suggested that Indigenous land rights are integral to Indigenous sovereignty and self-determination, particularly in responding to climate change. Indigenous land rights recognise Indigenous peoples’ inherent connection to their ancestral lands and acknowledge their traditional knowledge and stewardship practices, which are essential for effective climate adaptation and mitigation strategies. Indigenous communities’ ability to govern and manage their territories empowers them to implement sustainable land-use practices, preserve biodiversity and protect ecosystems that are natural buffers against climate-related hazards. By respecting Indigenous land rights, governments and stakeholders can foster partnerships that promote equitable and just responses to climate change centred on Indigenous values, knowledge systems and aspirations for environmental sustainability and community well-being.

This article also suggested that by recognising and restoring Indigenous sovereignty over ancestral territories, climate adaptation education rooted in land rights empowers communities to implement holistic, community-driven strategies for resilience in the face of climate change. One community leader noted, “Our climate education is inseparable from our land-rights movement. It is about restoring the balance disrupted by colonisation and leveraging our ancestral wisdom to adapt to contemporary environmental challenges.” The impact of Indigenous land rights as climate adaptation education lies in its ability to foster a sense of belonging, cultural identity and reciprocal relationships with the land (Evans, 2023). Therefore, relational learning is an effective climate education within Indigenous communities, embodying a dynamic and reciprocal connection integral to sustainable adaptation (Casas et al., 2021; Datta et al., 2023; McCoy et al., 2020). By focusing on land-based education in the understanding of this study, the community also suggested that the community’s well-being is inseparable from the health of the land; Indigenous communities cultivate a critical sense of responsibility toward the environment. This approach fosters ecological awareness, emphasising the intricate interdependence between cultural practices and the land. Effective climate education within Indigenous communities, rooted in relationships with the environment, imparts practical knowledge about sustainable living and nurtures a deep respect for the ecosystems that sustain life (Barkaskas & Gladwin, 2021). It encourages a harmonious coexistence with land and surroundings, fostering a stewardship ethos vital for navigating the challenges posed by climate change while preserving the cultural and ecological integrity of Indigenous lands.

Indigenous collaborative learning. Indigenous community collaborative learning stands out as a highly effective model for climate education, rooted in the principles of reciprocity, respect and shared responsibility (Smith & MacGregor, 1992). Similarly, our study suggested that by fostering a collective approach that values the diversity of community perspectives and incorporates traditional knowledge, this collaborative learning paradigm cultivates a richer understanding of climate change challenges and adaptation strategies. We also learned that the shared experiences and insights within the community contribute to a more comprehensive and context-specific education. This approach empowers individuals with practical skills for sustainable living and strengthens community bonds, recognising that collective action is vital in the face of environmental changes. Indigenous community collaborative learning thus emerges as a dynamic and culturally grounded educational methodology capable of instigating positive change, nurturing resilience and fostering a deep connection between community members and

their environment (Cochran et al., 2014; Hatcher, 2012). Therefore, Indigenous collaborative learning is critical in effective climate change education as it draws upon traditional land-based knowledge, enriching understanding of local ecosystems and adaptation strategies. This approach fosters community-driven solutions, integrating Indigenous perspectives and strengthening resilience in the face of climate challenges.

Intergenerational learning as effective relational learning. Intergenerational wisdom is a cornerstone of effective climate education, offering a profound and time-tested guide for understanding and responding to environmental changes (Bang & Lahn, 2020, 2016; Datta, 2018b). This study also suggested that, as passed down through ancestral teachings and storytelling, this wisdom encapsulates a holistic perspective that integrates ecological knowledge with cultural values. I also learned that by engaging with the experiences and insights of past generations, individuals within Indigenous communities gain a nuanced understanding of sustainable practices, resilience strategies and the interconnected relationships between humans and the environment. This form of climate education imparts practical skills for adapting to changing climates and instils a sense of responsibility toward future generations. Indigenous intergenerational wisdom, thus, serves as a powerful tool for nurturing environmental stewardship, preserving cultural heritage and building a sustainable legacy that transcends time and contributes to the ongoing resilience of Indigenous communities (Bang & Lahn, 2020). Therefore, Indigenous intergenerational learning is a potential form of relational climate change education, fostering ancestral knowledge and practice transmission. This approach ensures the continuity of sustainable practices, strengthening the interconnectedness between generations and promoting holistic responses to environmental challenges.

Thus, the discourse on Indigenous relationality in climate education unveils a transformative paradigm that transcends conventional approaches (Datta, 2022, 2023). The interconnected themes, from environmental understanding to community dynamics and ethical engagement, collectively form a rich tapestry of Indigenous wisdom. This framework enhances the efficacy of climate education and serves as a guidepost for sustainable adaptation strategies. It reflects the critical understanding that fostering resilience in the face of climate change necessitates embracing the intricate relationships that bind Indigenous communities to the land, culture and each other. Indigenous relationality in climate education emerges as a potent force, poised to reshape perspectives and pave the way for a more respectful coexistence with the land.

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