



Bank Street Occasional Paper Series

Occasional
Paper
Series

Volume 2023
Number 49 *Indigenous Pedagogies: Land,
Water, and Kinship*

Article 10

May 2023

Indigenous Pedagogies: Land, Water, and Kinship

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Recommended Citation

(2023). Indigenous pedagogies: Land, water, and kinship. *Occasional Paper Series*, (49). DOI: <https://doi.org/10.58295/2375-3668.1501>

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Indigenous Pedagogies: Land, Water, and Kinship

Introduction

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Occasional Paper Series

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Introduction

Indigenous Pedagogies: Land, Water, and Kinship

Anna Lees and Megan Bang

Indigenous communities, across lands and waters, engage in and build complex knowledge systems emergent from particular values and ways of perceiving and being in the world (Cajete, 1994; Deloria & Wildcat, 2001). Indigenous knowledge systems, values, and ways of being are understood and enacted within socio-ecological systems grounded in reciprocal kin relations. Meaning: for Indigenous peoples, teaching, learning, living, and being in relation with human and more-than-human beings is central to our knowledge systems. In Issue #49 of the Bank Street *Occasional Paper Series*, “Indigenous Pedagogies: Land, Water and Kinship,” we bring together Indigenous educators and researchers to demonstrate how Indigenous teaching and learning takes form across contexts.

Indigenous lifeways have endured since time immemorial and demonstrate how humans and more-than-humans can live reciprocally in healthy, thriving ecosystems. That said, projects of colonization throughout the globe have worked to decimate Indigenous value systems and ways of being and have denied the intellectual legitimacy of Indigenous knowledge systems. This has in part occurred through the reconstruction of land as property (Harris, 1993) and resource for capital gain, and the positioning of humans as superior and entitled to control land, water, and more-than-humans, while denying the personhood and capacities of non-human life forms. These foundational relational construals between humans and the natural world defined by the notion of human supremacy have been named many things over time (e.g., human exceptionalism). They have created the conditions for hierarchical forms of social power throughout history in which Indigenous communities across the globe have been positioned as less-than-human, thus legitimizing or pardoning the violence of colonialism (Bang, 2017). The settler colonial paradigms¹ driven by human supremacy that continue to drive global modernity have devastatingly altered global ecosystems and resulted in changing climates that put the future of not just Indigenous peoples, but all humans, and our more-than-human relatives, in peril.

Settler colonialism has built structures and social systems that required the separation of Indigenous peoples from our homelands and communities and forced new ways of living and being—including individual land allotments, farming, patriarchal social structures, age segregation, and language assimilation. The forced shifts in foundational relations and routine practices of everyday life are consequential for the ways in which Indigenous peoples learn. The separations have disrupted the pedagogical practices and knowledges of Indigenous communities, and impacted the ways in which Indigenous knowledge systems are learned and developed in new generations. Efforts to eliminate Indigenous knowledges as complex intellectual systems have also taken place through compulsory schooling and the onset of boarding (or residential) schools. This continues in the present in a plethora of ways. For example, there is a profound absence of Indigenous peoples, our histories, or our lifeways in pre-K-12 education, which produces a citizenry that has no or minimal knowledge of Native peoples or ethical commitments to our sovereignty, and even our right to exist as peoples (Sabzalian et al., 2021; Shear et al., 2015).

Further, education has been primarily relegated to an indoor activity—separated from families,

1 Settler colonialism is defined as a type of colonialism in which foreign settlers move to and permanently reside on land already inhabited by Indigenous residents, with the goal of eliminating them and their cultures and replacing them with a settler society.

communities, and land. These examples offer insights into how settler colonialism has impacted Indigenous communities and depict the conditions that have led to efforts of self-determination, decolonization, and resurgence. While the realities of colonialism are devastating, it is equally important and remarkable that Indigenous communities have managed to maintain and grow our ways of knowing and being and continue to revitalize our pedagogical practices and forms of education. This special issue was born from the assertion that Indigenous pedagogies are necessary to facilitate teaching and learning environments that nurture Indigenous values and knowledge systems and work to cultivate forms of life that support social and ecological thriving now and in the future. We think that Indigenous pedagogies can provide insights into forms of education that are needed for all students, given the necessary adaptations and preparations young people need for a changing climate and the coming large-scale social and ecological changes.

As Anishinaabe scholars, educators, relatives, and community members, we—the guest editors—make sense of these challenging times and efforts through our experiences living on and away from our homelands. Anna is a Waganakasing Odawa descendent of Scottish, German, African American, Italian, and English ancestry. She spent her early career as an early childhood classroom teacher (infants through kindergarten) and continues her work as a teacher educator collaborating with teachers in classroom and child care settings and engaging intergenerational learning out of school. Megan is of Ojibwe and Italian descent. She spent her early career as a teacher in a preschool classroom and went on to teach at elementary, middle, and high school levels before becoming a researcher and teacher educator. She works to transform models of education to achieve collective thriving. Anna and Megan collaborate closely together in multiple learning environments. As we came together to consider our experiences and understandings of Indigenous pedagogies, we reflected on our own upbringings—the work we have done and the guidance we continue to receive from our families and communities. As Anishinaabekwe, we know from our stories that humans have always made relations throughout earth and that these relations both help us know how to be in the world and allow our communities to thrive. We also know that challenging times, socially and ecologically, were to be expected and that if we live in a good way we can bring forth our collective continuance (e.g., Whyte, 2018).

As we face changing climates across the earth, many people are beginning to look to Indigenous knowledges to navigate these challenges. Scientists across disciplines (e.g., Kimmerer, 2013; Simard, 2021) and policymakers (White House, 2021) are beginning to recognize and understand the deep insight Indigenous knowledge systems offer for understanding and studying changing climates and ecologies. For example, in 2022 the federal government recognized Indigenous knowledges “as one of the many important bodies of knowledge that contributes to the scientific, technical, social, and economic advancements of the United States and to our collective understanding of the natural world” (White House, 2021). In addition, the US has begun to develop policies and practices for the routine engagement with Indigenous knowledges and consultation with tribal nations. Federal and state policies have also begun recognizing the importance of including Indigenous knowledges and understandings of tribal sovereignty for all US citizens (e.g., Bang & Brayboy, 2021), incorporating new content about Native peoples into state standards and curricular initiatives. The recognition of and movement toward epistemological heterogeneity in policy, science, schools, and society is, in our opinion, deeply hopeful and necessary for decolonization and thriving futures. At the same time, we are worried about the growing forms of repression occurring in US schools. State and local governments increasingly use schools as sites to deny this heterogeneity and aim to maintain current paradigms and even restore oppressive conditions of past generations—particularly with respect to race, gender, and sexuality—and deny intellectual legitimacy to those not aligned with dominant forms of knowledge and knowing.

Recognizing the direct connections between policy issues and the lived everyday experience of children and families, we believe that attention toward Indigenous pedagogies is necessary to develop

interconnected, relational learning systems for children and families. Following from our understanding of knowledge as relational and contextual, Indigenous pedagogies help us to attend to how teaching and learning take place. Attending pedagogically to the *how* offers intellectual space to consider the ways we collectively support healthy human development and attend to the values that underlie how we make meaning of Indigenous knowledges as they are situated across time and place. By working to understand this, we can foster continued educator development to engage Indigenous knowledge systems in ways that support the development of all children, knowing that pedagogical or instructional approaches must be learned, developed, and practiced with support in order to be positive and effective. We have committed ourselves to better understanding this process in our own work and build from these experiences in our articulation of Indigenous pedagogies for others to engage and further develop.

As we strive to articulate how we understand, develop, and enact Indigenous pedagogies, we are conscious of the range of positionalities and contexts in which readers of Issue 49 may be situated. We expect Indigenous pedagogies to be of interest to many educators—Indigenous educators working within their homelands and those working in communities other than their own; non-Indigenous educators working with Indigenous children and families; non-Indigenous educators working with non-Indigenous communities; and across these contexts, both White educators and educators of Color. However readers may identify, and in whatever context you are situated, we encourage you to reflect on your positionality in making sense of how you interpret the ideas and insights provided in Issue 49. We ask you to consider how you come to understand, develop, and enact Indigenous pedagogies with ethical commitments to children’s thriving in the everyday and to Indigenous peoples’ collective continuance.

INDIGENOUS PEDAGOGIES

While Indigenous knowledge systems have been written about extensively (e.g., Barnhardt & Kawagly, 2005; 2008; Cajete, 1994; Deloria & Wildcat, 2001), we find a need to continue contributing toward the articulation of Indigenous pedagogies across the field with hopes of helping to concretize or illuminate how they take form in the world. Indigenous knowledge systems are often characterized at the aggregate or collective level of community, and often through adult perspective discourses or in their most expert form—meaning their development and enactments in childhood or in exchange between children and adults, or novices and experts, are not as robustly articulated. While this has happened in many ways for necessary and sensible reasons from Indigenous communal perspectives—for example, trying to understand our complete knowledge systems or what our Elders know—it also reflects a privileging of Western academic priorities that may not serve our communities well. For example, documentation of Indigenous languages has largely focused on adult-to-adult discourse, limiting what we know about how fluent speakers speak to and with children. In some ways, these sorts of dynamics have limited what we know about supporting or understanding healthful Indigenous children’s development. A focus on Indigenous pedagogies (which includes, in our opinion, child-rearing practices) is a critical step in helping to cultivate thriving and sustainable communities.

There are risks in trying to specify Indigenous pedagogies. First, no articulation would be complete or sufficient or could minimize the complexity. And without serious ongoing engagement to reflect, refine, and improve practices, educational systems might take these up in a way that results in a mere checklist of completion. For non-Indigenous educators, there is always the risk of engaging stereotypes that continue the objectification and miseducation about Indigenous peoples and practices. Nonetheless, we work to describe some of the key dimensions in our work. While these dimensions do not encompass all Indigenous pedagogies, and are certainly reflective of the values, experiences, and needs of our own communities and those we work with, we believe they are important and that they might be used more widely. We hope that they will serve as an invitation to others to continue to articulate and refine pedagogical practices that serve our collective wellbeing. More specifically, we focus on core

pedagogical practices involving lands and waters, kin relations, intergenerationality, and cultural forms of life. Within cultural forms of life we emphasize language, storywork, civics, and subsistence practices—by which we mean those practices—including artistic/creative practices, which we see as necessary for healthy life.

LANDS AND WATERS

Living in meaningful, intentional relations with lands and waters, and the more-than-human relatives within, is an essential way of life for Indigenous peoples and necessary in learning environments to reflect community ways of being. For many, living these relations involves a process of (re)learning within our daily activities and routines. Pedagogically then, educators must actively engage and collaborate with lands and waters in the teaching and learning process, which to be clear requires that education (and educator development) take place outdoors on/with lands and waters. Engaging and collaborating means that lands and waters hold an active role in the learning environment and contribute pedagogically to children’s experiences, understandings, and development. For many Indigenous peoples, more-than-human relatives have personhood, agency, and are afforded respect and dignity as a fellow life form; and thus, can actively participate in teaching and learning. Engaging lands and waters pedagogically requires educators to develop relationships with the natural world in order to understand the surrounding ecosystem and more-than-human characteristics. This requires educators themselves to spend a great deal of time outdoors and to trust the knowledges held within lands and waters that contribute to human learning.

In these conditions, educators may work to facilitate meaningful outdoor learning experiences with children and families in collaboration with lands and waters. In practice, this looks like children, families, and educators walking lands and waters with educators, helping learners to notice, observe, perceive, and wonder about socio-ecological systems, and completing inquiries to build their knowledge of the world around them.

We see this take form in the examples of reading lands and waters depicted in this issue by Forrest Bruce, Megan Bang, Anna Lees, Nikki McDaid, Felicia Peters, and Jeanette Bushnell. In their article, an elder educator supports young people in developing skills in reading and interpreting water and atmospheric patterns. They demonstrate how educators can scaffold learner interaction with lands, waters, and more-than-humans by prompting observations, wonderings, and interpretations, as well as offering distinct content to support understandings. We can also offer ample opportunity for children to develop these relationships in ways that afford them natural outlets for reciprocal communication with the natural world, so they learn on/with lands and waters as routine experience. Such routine experiences and water relations are brought to life by Marissa Aki’Nene Muñoz, who shares stories of the Rio Grande across generations along with the possible futures of these relations within contemporary nation state and Indigenous peoples’ scales of time and space.

KIN RELATIONS

Living with and as kin is a core value and way of being for Indigenous peoples that drives the ways in which we must design and enact positive learning environments. Living and learning in kinship is intricately connected with land, water, and place. In this issue, Bryan McKinley Jones Brayboy articulates place and kinship through the ways in which Indigenous knowledges, including pedagogies, take form from and with place as relative. Following the interruption of kinship in school-based learning from the onset of boarding schools, and the contemporary structures of age segregation, indoor learning, and focus on individual achievement, there is much to be done to (re)instate kinship as a primary relational dimension of teaching and learning. We’ve been working to make sense of this. What

is a process for coming to understand and bring into practice kin relations that do not romanticize or shallowly represent the complexities of how we understand our roles, relationships, responsibilities, and sharing of gifts as family beyond colonial enclosures? We find that it takes intention and commitment to live as kin and see this as radical resurgence in the everyday (Corntassel, 2012; Simpson, 2017). And for educators working in schools or other formal settings, it requires a substantial shift in the teacher-student-family and human-more-than-human dynamic to reconnect these roles away from a transactional model toward one of relationality. To find words to express our thinking around kin relations, we draw on the work of Van Horn and colleagues (2021), who have thought deeply about kinship in their edited series across conceptions of planet, place, partners, persons, and practice. In their theorizing of kinship, they put forth the notion of “kinship as a verb... kinning” (p. 3) where, “being kin is not so much a given as it is an intentional process. Kinning does not depend upon genetic codes. Rather it is cultivated by humans, as one expression of life among many, many, many others, and it revolves around an ethical question: how to rightly relate?” (p. 3).

Wondering “how to rightly relate?” has driven much of our time together as we work to create conditions for Indigenous children and communities to thrive and find joy now and into the future, and for us to live out our teachings as Anishinaabekwe. We also see this as an important beginning for educators working to enact Indigenous pedagogies. The question of “how to rightly relate?” is also a challenging one. While being in good relations is nurturing and sustaining for human and more-than-human peoples, it can also be quite difficult. Many of us must rebuild our understandings of and attunements to our relations with more-than-human relatives, getting to know the plant, animal, and other beings who give us life and teach us how to be in the world.

In this issue, Donna Reid-Hayes depicts her efforts to engage this process with young children through a series of learning experiences with land, water, and more-than-human relatives in a kindergarten in Hawai‘i. This example demonstrates how educators, families, and communities can come together to (re)claim kin relations in education and how this process can take form intentionally, iteratively, and with generosity to foster children’s development and the process of decolonization. And while this process can elicit beauty and joy, such engagement between human people—relating rightly in a web of kinship—entails complex interpersonal dynamics where our kin may not always bring out the best in us. This is compounded through colonial constructs of individual achievement and self-gain that ground many of today’s education systems. Kimmerer offers insight as she reflects on these complexities and shares that “kinship arises not because we are the same, but because we are different. It is the respect for difference and the love that comes across difference that makes kinship hard. It is easier to love the beings that are the same as you. It is a lot harder to love those who are different than you. It is a lot harder to weave love across scale and culture and into the sovereignty of other beings” (Van Horn et al., 2021, p. 128).

In their paper, Hollie Kulago, Paul Guernsey, and Wayne Wapeemukwa share insights into the challenges of living and working within epistemological difference and the deep effort and intentionality necessary to enact Indigenous pedagogies within such complexities. While no one in this issue has claimed ease or sureness in these efforts, this reflection offers a place to begin: if we can all work to love, as Van Horn says, “across scale and culture and into the sovereignty of other beings” (2021, p. 128), we may forward our desires toward collective continuance through both school and community-based practices.

INTERGENERATIONAL

The separation of human people into discrete age groups for the purposes of teaching and learning

is a recent phenomenon grounded in settler colonial and capitalist ideals. Reinstating kinship as a premise of teaching and learning is contingent upon the development of intergenerational learning environments. Intergenerationality is present throughout this issue. Stephany RunningHawk Johnson and Sequoia Dance share how an Indigenous language teacher insisted upon mixed-age groups as he engaged children in classroom-based learning; Bruce, Bang, Lees, McDaid, Peters, and Bushnell engage this through an intergenerational outdoor learning program; and Muñoz shares daily, family-based routines that afford learning with, from, and by/in the river. The intergenerational dimension of Indigenous pedagogies is an important companion to kin relations, whereas learning as a social engagement takes form within community contexts that include children across ages, adults, and Elders—as seen by Reid-Hayes bringing children’s learning into the community context with their families. This allows for a natural representation of experiences, perspectives, knowledges, and wonderings that afford opportunities for collective teaching, learning, and sense-making.

Bringing forward intergenerational teaching and learning also disrupts the construct of one teacher leading a large group of children. Shifting the arrangements of teacher/learner, we shift how knowledge is transferred and developed and move toward a model of collectivity rather than one of individual growth and achievement. Educators can engage intergenerational learning by building their teaching and learning alongside families. Beyond a model of mandated family partnership or engagement, educators can work in relationship with families to value and make visible the ways family learning takes form within complex knowledge systems and practices. In school-based learning, this supports connections to everyday life that afford meaningful learning and developing understandings within more coherent educational experiences, as James Whistocken LaSarte does in his curriculum development featured in the paper by RunningHawk Johnson and Dance. Such relationships require that educators design opportunities and invitations for families to share themselves, their knowledges, and their daily routines in support of a more intergenerational learning environment.

CULTURAL FORMS OF LIFE

While Indigenous cultures have been a focus of curriculum content over time and have typically taken an anthropological approach in school-based teaching and learning (Sabzalian, 2019), we see opportunities to engage culture in learning environments that reflect Indigenous lifeways and have the potential to nurture children’s healthy development and community wellness. Here, we depict storywork, communal and cultural practices, language, and civic responsibility as important cultural elements to engage pedagogically. This is not the extent of Indigenous culture and we are not advocating that readers take up efforts to “teach culture.” Rather, we understand and support cultural approaches to teaching and learning. Teaching within cultural forms of life allows children and families to see educational programming that fosters the values and knowledge systems important for their communities and that have the potential for children to build the necessary skills to uphold their developing roles and responsibilities.

STORYWORK

With so much around Indigenous values, knowledges, and ways of being held within Indigenous stories, storying pedagogically is a necessary component of Indigenous activity systems. Stories teach us how we can be in the world, the histories of our sacred places, the gifts shared from human and more-than-human relations, how to learn and recover from mistakes we make, and how to live a good life overall. One must know stories to engage them pedagogically. We see this across the articles in this issue as authors have each engaged storywork in their own right. Stories also take form through making and artistic representation—where the arts, songs, dance, and other outward forms of expression embody

and transmit stories between peoples, space, and time. Opportunities to listen to and tell stories repeatedly as well as to make and create allows both storytellers and story listeners/observers to engage with the depth of content and teachings held within stories. Repeated telling, listening, observing, making, and creating also embraces the ways in which our understandings of stories develop differently with each telling in different times and places.

Jo-Ann Archibald has theorized storywork extensively throughout her career (Archibald, 2008; Archibald et al., 2022) and in this issue offers an important depiction of the pedagogical nature of storywork. We encourage educators to consider the significance of storywork and storying in ways that are different from reading books aloud as part of our instructional practice. Taking time to learn and know stories in order to tell them, rather than read them, and valuing the aesthetic and intellectual nature of making them is an important aspect of bringing stories to life in ways that connect them to the moment in time and place in which they are told.

SUBSISTENCE PRACTICES

Knowing how to live as Indigenous peoples in the places we come from and reside in is an essential part of sustaining ourselves as humans and in respectful relationships with more-than-humans. Our stories hold teachings of how to live on this earth, including how to acquire, prepare, and preserve food sources, medicines, and everyday necessities and how to develop and enact artistic and creative processes. Pedagogically, this means that we take seriously the inclusion of subsistence practices in learning environments and view this as a natural connection with learning with and on lands and waters. Offering opportunities for learners to observe and enact respectful hunting and harvesting practices and develop their skills in processing the gifts offered from the lives of plants and animals builds their readiness to live a sustainable life. For example, opportunities to harvest nettle or cedar—and learn the medicinal properties of these plants and how to make teas and salves for healing—is a skill that can serve us across the lifespan, is applicable in many geographic places, and builds understandings toward greater plant medicine knowledge. In developing subsistence practices with nettle and cedar, we can also engage the numerous gifts offered by more-than-humans. With cedar, we can build from medicinal properties to cordage and basket-making, canoes and housing, and carved goods. We can also engage understandings and respect for the gifts shared between more-than-humans, with cedar offering food for deer and other animals and older cedars providing the conditions for young cedar to thrive. These examples of subsistence through relations with nettle and cedar are applicable to other plants; to hunting deer, elk, ducks, and other animals; and to fishing, crabbing, and shellfish gathering.

Bringing these teachings into learning environments requires collaboration with lands and waters and each other, as typically one human does not hold all of these teachings or gifts. We see this through Reid-Hayes' description of bringing young children to help repair the fish pond, and with RunningHawk Johnson's and Dance's discussion of curriculum design around relations with water potatoes. In both instances, the learning environment was developed in relation with local practices, knowledges, and phenology (i.e., cyclical and seasonal impacts on plant and animal life cycles).

Engaging subsistence practices in teaching and learning also requires us to see the epistemological value in harvesting, making, and engaging the arts. The creativity and aesthetic value of these practices should not be undervalued. Making, creating, singing, and dancing are all essential life practices to foster human development and wellness and are embedded aspects of our intellectual gifts. Basket-making, for example, may not be necessary to functional routines in contemporary times, but for Indigenous education, the pedagogical practice of teaching and learning that takes form through weaving helps one understand their roles and responsibilities within their community. These practices depict the beauty and technological innovation held in Indigenous knowledges and lifeways that

foster positive self-identity and a depth of understanding around socio-ecological systems and the relationships between humans and more-than-humans—as well as mathematical and engineering concepts held within harvesting, cultivating, and processing. We hope that this articulation begins to depict the depth of teaching and learning that takes place through subsistence practices and helps educators to see ways that such learning can offer rich, culturally nourishing learning opportunities.

LANGUAGE

Opportunities to teach and learn Indigenous languages are necessary for understanding how we are meant to live and be in relation with each other and the world. Indigenous languages offer localized teachings to understand the natural world and ways of interacting with humans and more-than-humans. For example, Indigenous place names offer descriptions and stories of the places and land/water features within our communities. Plant, animal, and human names often depict the gifts and characteristics of these beings that help us to better understand their roles, responsibilities, and relationships in the world. Offering opportunities for Indigenous language learning is also of substantial importance in building Indigenous children’s identity and wellness. RunningHawk Johnson and Dance offer insight into the importance of engaging Indigenous language education in schools within meaningful contexts; in their case, they explicitly bring together language and science learning. Reid-Hayes importantly shares the process of an educator beginning to integrate Indigenous language into the learning environment with the support of families, showing how educators themselves embrace their own learning and development in the best interests of children.

In most places, Indigenous language education requires and should entail intergenerational learning environments where children, adults, and Elders can learn together through stories and ancestral teachings. Such an intergenerational and community-driven approach is important for all educators and will help make clear what the role may be for non-Indigenous educators or Indigenous educators away from their homelands who are looking to support Indigenous language education.

Indigenous language education takes form in different ways across different communities. We see language immersion programs working to develop fluent speakers (McCarty et al., 2021), teacher/learner models where adults are learning the language as they teach others (Lees et al., in press), and vocabulary-based instruction where single words or simple phrases are interwoven with English instruction. And we find value and encourage the use of every effort. Engaging Indigenous languages as central to Indigenous knowledge systems restores community practices of teaching and learning. As educators, demonstrating the value of Indigenous language across learning settings is a pedagogical effort to reverse longstanding policies and practices of linguistic.

CIVIC RESPONSIBILITY

Much work has developed around Indigenous nation-building and the inclusion of Indigenous histories and sovereignty in pre-K-12 curriculum. The importance of understanding tribal sovereignty and nationhood is fundamental in fostering positive settler-Indigenous relations. The political nature of these is at the core of treaty agreements as we know them today and in how federal and state educational initiatives have taken form. We value these efforts and maintain that pedagogical aspects of nationhood and sovereignty must begin with what Bang and Brayboy (2021) have named Indigenous civics. Indigenous civics forwards “ancestral teachings about how to be a good human and live a good life, and to fulfill our responsibilities to be good relatives” (p. 165).

In their paper, Kulago, Guernsey, and Wapeemukwa bring to light how educators work to fulfill their responsibilities within the context of higher education and help us to see the ways in which non-Indigenous educators and Indigenous educators living away from their homelands can contribute to

the recognition of tribal sovereignty and nationhood in education. Bang and Brayboy offer a framework for engaging such civic responsibility as a core construct to support the teaching of tribal sovereignty in classroom and community settings. Beginning with Indigenous civics and our collective civic responsibility, we can ask:

- What roles, relations, and responsibilities do we have with each other?
 - With more-than-human life?
 - With the land and the waters upon which all life depends?
- How should we nurture and uphold those relations?
- Who could we collectively become? (Bang & Brayboy, 2021, p. 165)

These questions move us away from sovereignty education that forwards politics of recognition (Coulthard, 2014) and instead engage learning environments committed to our collective continuance (Whyte, 2018). In this issue, we see Linda Tuhiwai Smith's offering around the significance of acknowledging land as an act of Indigenous civics, where she has reframed the institutional notion of land acknowledgments back to one of relationality and responsibility to land and water as kin.

Fostering Indigenous civics offers an opportunity to engage children's sensemaking and complex reasoning as they consider their developing roles, relationships, and responsibilities within their communities and recognize the gifts they can offer to humans and more-than-humans, as well as the gifts others have to offer. Bruce, Bang, Lees, McDaid, Peters, and Bushnell forward these efforts by promoting young people's developing relationships and responsibilities toward water as relative and the inherent sovereignty of water and water's relations with other more-than-human beings. Encouraging educators to embrace their role in forwarding Indigenous sovereignty and nationhood through a model of Indigenous civics offers important paths toward more just and sustainable lives for humans and more-than-humans.

ETHICAL RESPONSIBILITIES TO INDIGENOUS PEDAGOGIES

Understanding the principles and complexities of Indigenous pedagogies is an important beginning to transforming teaching and learning environments with young children through the lifespan. We see the everyday enactments of Indigenous pedagogies as often iterative in nature. This means we reject a binary of "teaching Indigenous" or not as we work to (re)establish community-based practices that have endured since time immemorial and that have been minimized or forbidden for varying periods of time in many places. So, as we commit to serving Indigenous children and families through systems of education, we take steps forward toward our goals of resurgence and decolonization in the *what* and *how* of our teaching. We hope to have depicted the pedagogical dimensions and processes of development in the offered examples. To continue this, we share particulars of engaging Indigenous pedagogies on and off our homelands.

ON AND OFF HOMELANDS

Indigenous pedagogies develop and take form in relation with the lands, waters, and more-than-human relatives where we reside and teach and learn. Land, water, and human and more-than-human relations are necessary beginnings for developing and enacting Indigenous pedagogies for Indigenous educators living both on and away from their homelands. This includes a recognition of and responsibilities to issues of sovereignty and self-determination for Indigenous peoples both in the US and globally. The nuance of teaching on and off homelands is an important aspect of educator positionality to attend to, considering that Indigenous peoples have always moved for seasonal practices, climate responses, economic activity, and knowledge transmission—as Brayboy examines in this issue.

Living, traveling, and working across territories is not a new endeavor. However, we recognize that human migrations over the last several centuries or more have been driven by power and dehumanization and reshaping relations to homelands. These forced and coerced migrations are often coupled with paradigms of race and White supremacy and simultaneously enact Indigenous erasure. To be explicit, Indigenous Africans were enslaved and brought to the US and identified as Black, not Indigenous (Kelley, 2017). Many Indigenous peoples from Central and South America become Latinx in a US context and their Indigeneity is erased (Urrieta & Calderón, 2019). We think the complexity of taking up Indigenous pedagogies and the histories of relations to homelands is profoundly complicated. But we also want to be careful about positioning our harm or colonial timeframes as the beginning from which Indigenous pedagogies are conceptualized and enacted. We know from our experiences and our stories that Indigenous people have always moved and have done so with intention and care. Understanding through story how this has taken form since time immemorial has been important in our own development as educators and the ways we work with children and families. We are thoughtful in this as so often the story of Indigenous migration begins with dispossession and relocation, and certainly that is the story mostly prevalent in pre-K-12 curriculum. Giving attention to how we teach on and off our homelands offers space to reflect positively on the factors that have led to the circumstances of where we reside. Knowing our histories and the histories of the place where we work and live is an important beginning to knowing how to be and how to fulfill our roles and responsibilities as educators.

We have each lived on and away from our homelands as students, educators, and relatives; we have lived close to one another and at a distance, and where we live has informed how we relate and work together. We have reflected on how our roles take different forms depending upon location and how developing our land and water relations serves as the core of our teaching and learning. When teaching on our homelands, we work to fulfill our relationships within a kinship network in which we were raised. These relationships with human and more-than-human relatives have guided our learning, interactions, and decision-making through our growth and development. They are familiar. Familiarity does not ease the complexity of teaching, learning, and enacting Indigenous pedagogies, but it offers a context in which we understand our developing practice as educators.

Teaching and learning away from our homelands has offered important, fulfilling experiences in understanding how Indigenous learning environments take form and what that has been for Indigenous peoples over time, where movement and exchange of knowledge and ideas have always been present. Living, teaching, and learning away from one's homeland also begins in relationship with lands, waters, and human communities. Building kin relations in places away from where you call home is a necessary condition for understanding how to develop and enact Indigenous pedagogies in that place. And knowing how to build such relations can be supported in partnership with the Indigenous communities where we reside. Ultimately, Indigenous pedagogies require a strong foundation of relationality with humans and more-than-humans; the ways in which the relationships are developed and nurtured may take form through different processes on and off homelands but they ultimately encompass shared ethics and values from educators and communities.

Understanding these positionalities and processes is also important for non-Indigenous educators who can develop meaningful relationships with Indigenous communities where they are teaching and learning. Coming to know lands, waters, and peoples as active agents in learning environments is necessary for all educators. And for non-Indigenous educators wanting to contribute toward positive Indigenous learning environments and further enact Indigenous pedagogies, beginning their efforts in relationship with the communities where they are working will offer a network of support to learn, grow, and best serve children and families. Recognizing this positionality and the complex relationships (human and more-than-human) that exist where one lives and works is an ethical responsibility

that non-Indigenous educators can hold in commitment to Indigenous sovereignty and thriving. To be sure, this is a political commitment and one that takes effort across a multitude of professional responsibilities. Knowing the histories of the lands, waters, and peoples in the place that one has come to call home sets an important foundation to forward Indigenous civics in work as an educator and a responsible community member.

CONTEMPLATING THE COMPLEXITIES

While we work to articulate Indigenous pedagogies for a wide audience, we wish to reject a homogenization of Indigenous peoples, communities, and ways of teaching and learning; here, we close with a discussion of some of the complexities and worries we hold in articulating Indigenous pedagogies and share our ideas of how educators with varying positionalities may consider their roles and practices. We embrace the unique languages, cultures, and identities of Indigenous peoples across geographies by centering lands and waters; Indigenous pedagogies will undoubtedly look different in different places as they are driven by local socio-ecological systems. We have also named the importance of relationality, which drives pedagogical practices and will be localized in nature. We worry that forwarding Indigenous pedagogies for educators broadly could result in a romanticization or appropriation of indigeneity. We have asked readers to reflect on their positionality through the reading of this piece and we ask you to think critically about your own identity and how that takes form where you teach, learn, and reside. In part, this means taking seriously how we commit to Indigenous education and pedagogies as everyday acts of resurgence and not as an additive form of multiculturalism (Richardson, 2011). It also means being explicit about our own identities within the places we teach, and actively rejecting an appropriation of Indigenous peoples and cultures; engaging Indigenous learning environments does not make one Indigenous (Tuck & Gatzambide-Fernández, 2013).

Even as we express our cautions and concerns, we remain conscious of the limitations of the written word. We hold great value in the oral exchange of ideas and time visiting with each other, Elders, and relatives, what Cajete names the sacred breath (Cajete, 2005). We recognize the importance of sharing thinking across context and the power of writing in the transmission of ideas toward social transformation. We offer our thinking here in commitment to nurturing our children's development and joy in education and ask that you join us in this thinking and in continued efforts to enact and to grow Indigenous pedagogies. Ultimately, our interest in this special issue is in the everyday experiences of children and families. Schools have not historically designed learning environments for the best interest of Indigenous peoples. With increased interest and attention toward Indigenous knowledges, we hold cautious hope that now is an opportunity to (re)imagine how educators across places and positionalities may come together with shared values and desires to regenerate Indigenous pedagogies and educational sovereignty that contribute to thriving Indigenous futures. We also hope that engaging Indigenous pedagogies will contribute broadly to sustainable and just futures.

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ABOUT THE AUTHORS



Anna Lees (descendant of Little Traverse Bay Bands of Odawa Indians) began her career as an early childhood classroom teacher in rural northern Michigan. Now, an associate professor of early childhood education at Western Washington University, she partners with schools and communities in teacher preparation. Anna is committed to developing and sustaining reciprocal relationships with Indigenous communities to engage community leaders as co-teacher educators, opening spaces for Indigenous values and ways of knowing and being in early childhood settings and teacher education. She is currently engaged in research around a land education professional development model led by tribal nations and a relationship-based site-embedded professional development model with tribal early learning programs.



Megan Bang (Ojibwe and Italian descent) is a professor of the learning sciences and psychology at Northwestern University and recently served as the senior vice president at the Spencer Foundation. Dr. Bang studies dynamics of culture, learning, and development broadly with a specific focus on the complexities of navigating multiple meaning systems in creating and implementing more effective and just learning environments in science, technology, engineering, arts, and mathematics education. She focuses on reasoning and decision-making about complex socio-ecological systems in ways that intersect with culture, power, and historicity. Central to this work are dimensions of identity, equity, and community engagement. She conducts research in both schools and informal settings across the life course. She has taught in and conducted research in teacher education as well as leadership preparation programs. Dr. Bang currently serves on the Board of Science Education at the National Academy of Sciences. She also serves as an executive editor of *Cognition and Instruction* and is on the editorial boards of several other top tiered journals in the field.

Indigenous Water Pedagogies: Cultivating Relations Through the Reading of Water

Forrest Bruce, Megan Bang, Anna Lees, Nikki McDaid, Felicia Peters, and Jeanette Bushnell

As Indigenous peoples, living in right, respectful relations with the natural world has always been a vital responsibility. The well-being of human communities is intimately connected with the well-being of more-than-human (MTH) communities comprising plants, animals, insects, water, and other natural beings. Indigenous peoples have had a deep understanding of the interdependence between all forms of life for countless generations and have always worked to live in reciprocal relationships with the rest of the natural world (Cajete, 2000; Kimmerer, 2013). Such an orientation to the natural world is needed now, perhaps more than ever, as human communities must figure out how to adapt and build thriving futures in the midst of changing lands and waters. The relations—whether reciprocal, extractive, or some other way of relating with the world—that we make with the natural world will have a profound impact on the well-being of future generations, both human and MTH.

The authors of this paper are all Indigenous. We each see the work we do, reflected in this paper, as part of our collective responsibilities and contributions to our communities. Forrest is a member of the Fond du Lac Band of Ojibwe and of German descent. He is a graduate student and grew up in Minnesota, but has been living in or near Chicago for the last 10 years. Megan is of Ojibwe and Italian descent. She is a mother, auntie, daughter, sister, and cousin, amongst other relations. She is the principal investigator of the project this work was conducted in and has been an educator and scholar for going on three decades. Anna is a Waganakasing Odawa descendent. In addition to her roles in family and community, she spends much of her time researching and working alongside children, teachers, and teacher candidates. Nikki is a citizen of the Shoshone-Bannock Tribes and is also of Paiute and Irish descent. She is a mother of two with another on the way, an auntie to many, a daughter and granddaughter. She is a PhD candidate and researcher for the Indigenous STEAM (sciences, technologies, engineering, arts, and mathematics) project, and is heading into a faculty position. Felicia is Menominee and Santo Domingo Pueblo. She grew up in Chicago and has worked with the Native American community of Chicago for 20 years. She is the program coordinator for the project and worked for seven years as a math and science middle school teacher. Jeanette is a citizen of the Turtle Mountain Band of Chippewa Indians North Dakota. She was born in Tacoma, Washington and raised in Olympia and has lived near the Salish Sea for all but three years of her life. She is retired but continues to teach part-time at the University of Washington Honors Program on topics related to Indigenous philosophy. She continues her life as a sibling, mom, Kookom (grandmother), as well as cousin and auntie to many.

This work is intended to elevate a focus on human-water relations in part because we believe human relationships to water are particularly important to building thriving futures. Water is the basis of all life. And many of the most pressing issues of this era are water-related (Pokhrel et al., 2021; WHO & UNICEF, 2021; Vousdoukas et al., 2020). From droughts to floods, to water access and contamination, our collective futures are largely dependent on human communities (re)making ethical relations with water. Ethical relations require upholding all life's need to have access to clean water, as well as to recognize water's inherent value and sovereignty to exist in its own right.

Indigenous peoples, knowledges, values, and ways of being could play an important role in fostering ethical relations between humans and water. A core part for many Indigenous knowledges is an understanding that water is a relative with personhood and should be afforded dignity and respect

(Yazzie & Baldy, 2018; Wilson & Inkster, 2018). Simply put, water's existence is not for the sake of humans. Consider the series of ethical commitments that follow from understanding water as a relative rather than an exploitable resource. For example, many Indigenous peoples have advocated for legal personhood and the rights of MTHs, such as rivers, and some have put these rights into policy through their tribal government (Yurok Tribal Council, 2019) or negotiations with settler nation-states (New Zealand Parliament, 2017). Such stances fundamentally shape our ways of living and gesture toward a different kind of future where we live in reciprocal relations with water. For these reasons, the task of building socio-ecologically just and sustainable futures goes hand in hand with the regeneration of Indigenous ways of knowing and being.

The socio-ecological challenges of this era are fundamentally issues of learning. Building thriving futures will require humans to *learn* to live in healthy, respectful relations with water and the rest of the natural world. Education, as an institution of learning, is essential to this endeavor. Learning to live in healthy, respectful relations with water will require systems of education that cultivate a caring relational ethic and complex thinking about the natural world. Such education would support children and families in coming to understand themselves as a part of, rather than apart from, the natural world (Bang et al., 2007; Medin & Bang, 2014). Fundamentally, we argue that we need education that ruptures the false divide between humans and nature and supports an understanding of the natural world as a web of interdependent relationships that we are all a part of. Indigenous values, ways of knowing and being do just this, as they are rooted in an understanding of relationality amongst all things (Cajete, 2000; Kimmerer, 2013). In the same way, Indigenous pedagogies are chiefly concerned with nurturing that sense of interconnectedness and supporting learners to learn to live in reciprocity with all their relations, including humans and MTHs (Deloria & Wildcat, 2001; Simpson, 2014; Bang et al., 2014). These types of pedagogies are imperative if we are to develop systems of education that advance thriving futures for lands, waters, humans, and MTHs.

In this article, we offer a model of Indigenous water pedagogies using a case study of three vignettes from an Indigenous STEAM (ISTEAM) summer program. We review three vignettes as a case study to highlight the different aspects of Indigenous water pedagogies that cultivate ethical relations with water toward just and sustainable futures.

INDIGENOUS WATER PEDAGOGIES

As scholars and educators, we take up nature-culture relations, defined as the socially constructed relationships between humans and the rest of the natural world (Bang & Marin, 2015). Nature-culture relations—which include relations with water—are an important pivot point for improving systems of education toward more thriving futures. They shape the what, where, why, and how of learning environments at a fundamental level. Consider the human-nature relationship being implicitly taught in most schools. Most, if not all, educational activity takes place indoors while the outside is primarily reserved for recreation like recess and playtime. This structure of schooling hinges on the assumption that intellectual activity only takes place inside. Core to this assumption is the idea that humans are both distinct from and superior to the rest of the natural world (Bang et al., 2014).

Now, consider how schooling typically structures children's learning about water. Dominant approaches to water education rarely give children the opportunity to physically interact with water, much less water existing in a natural habitat (like an ocean, stream, or rain puddles). Further, these learning experiences typically take place indoors, isolated from the natural world. For example, in early childhood education, one common approach to water-based learning involves sensory tables that are intended to develop children's sensorimotor skills and introduce them to scientific concepts, like the buoyancy of different objects, through exploration and play (Gross, 2012). While these activities allow

for physical interaction with water, they position water solely as a resource for child development and leave little if any room for engaging with water as a relative, or ethical considerations of how humans can support water's well-being (Nxumalo & Villanueva, 2019).

These shortcomings continue through primary and secondary schooling, where water education is primarily concerned with abstracted understandings of phenomena like the molecular composition of water or the hydrologic cycle. For example, the Next Generation Science Standards (a national framework for science education that focuses on engagement in science practices toward developing scientific literacy) 2-ESS2-2 asks learners to develop a model that represents the shapes and kinds of land and bodies of water in an area. While understanding these properties of water are important and necessary, we worry that dominant models of water education attend only to these technical aspects, and fail to engage with humans' relations and ethical responsibilities to water or to the political context of water in history and the present (Davis & Schaeffer, 2019; Nxumalo & Villanueva, 2019; Bang et al., 2012). Building systems of education that cultivate right relations with water will require greater attention to the nature-culture relations that are inherent in the broad structure of schooling, as well as the pedagogical details of how one teaches about and with water.

Toward these ends, we call specifically for greater attention to and development of Indigenous water pedagogies. Despite being the basis of all life, water is under-articulated when it comes to land-based, place-based, and field-based science education. We have come to see that framing education solely around land, without enough emphasis on water, fails to disrupt colonial paradigms that position land as the basis for property and territorial claims. Such paradigms conflict with those of many Indigenous peoples, for whom water is central not only to territorial struggles but to defining who we are as a people (Daigle, 2018; Wilson & Inkster, 2018). We argue that this disfigured understanding—which privileges land as property and ignores the vitality of water—lies at the root of why water is overlooked when it comes to outdoor learning environments. Although land is central for Indigenous peoples, prioritizing relations with land over relations with water is irreconcilable with Indigenous lifeways, in which water plays an equally vital role. Further, focusing on one over the other upholds the notion that land and water are separate and diametrically opposed rather than always in relation to and dependent on one another.

We share our efforts to develop Indigenous pedagogies that teach about land and water as fundamentally connected rather than as separate entities. While we understand land- and water-based education as inseparable, due to the overt focus on land we find it necessary to specifically discuss what it means to teach about and with water. This article discusses Indigenous water pedagogies as a method for teaching about water in a way that is grounded in Indigenous lifeways and restores right relations with water. We focus specifically on two dimensions of Indigenous water pedagogies: 1) relations with water and 2) reading water. These dimensions were developed in the context of a community-based design research project in collaboration with children, families, and community educators (Bang et al., 2016). We also build with other communities and scholars who have been working toward water pedagogies that are lifegiving, relational, and lean into the political and ethical dimensions of water education (e.g., Nxumalo & Villanueva, 2019; Nxumalo, 2021; Pacini-Ketchabaw & Clark, 2016; Davis & Schaeffer, 2019; Marin & Bang, 2018; Bang et al., 2012).

Relations with Water

Teaching about relations with water involves recognition that water, humans, and MTHs are intimately linked in a web where the well-being of one is dependent on the well-being of another. The second dimension, reading water, involves careful observations and noticing of water as it exists in the natural world. While it's worth recognizing relations with water and reading water as distinct aspects of Indigenous water pedagogies, we also understand these dimensions as mutually constituting one another. That is, making relations with water involves learning to read water and vice versa.

We suggest that making relations should be the starting point for any learning experience with water and depict this in the following vignettes. Dominant models of science education tend to focus on the physical properties of water and its utility to humans, leaving little room for, or even actively discouraging, deeper questions around what it means to be in relation with water (Davis & Schaeffer, 2019; Nxumalo & Villanueva, 2019; Bang et al., 2012). Centering relations with water opens up space for ethical deliberation and “should we?” questions that facilitate reflection on how we ought to live in the world if we are to contribute to the collective thriving of human and MTH communities (Tzou et al., 2021; Ferkany & Whyte, 2012). Importantly, teaching for relations with water should extend beyond human-centrism and include water’s relations with all beings. Situating humans as but one small part in a broader web of relations disrupts the notion that humans are superior to the rest of the natural world and the claim that extractive relationships with water are justified (Cajete, 2000). Lastly, we have found the recognition of MTH personhood to be an important part of land- and water-based education that supports ethical environmental decision-making (McDaid Barry, et al., in press).

Reading Water

The second dimension of Indigenous water pedagogies that we raise is reading water. We use the term reading water deliberately because we understand it as an important form of literacy. That is, reading water involves learning to take in and derive meaning from complex phenomena. Like learning to read text, learning to read water deeply changes how one understands the world. Marin & Bang (2018) show how learning to read lands and waters is an important practice for scientific inquiry. It involves paying close attention to water as it exists in the world, noticing details like changes in an ocean’s tide or plants that grow along a riverbank. Importantly, reading water involves recognizing how water exists and shapes life in places that are not immediately obvious. For example, differences in plant growth between the bottom of a hill and the top, or between shaded and unshaded areas are largely shaped by the presence and movement of water. Learning to understand water as always present—whether it’s a river, in clouds, in the ground, or in our bodies—recognizes the central role of water in supporting life on this planet and disrupts the colonial prioritization of land. Recognizing the vitality of water in all facets of life also supports humans to take greater care and live in ethical relations with water.

Together, these two dimensions of Indigenous pedagogies work to cultivate learning toward thriving futures for humans and MTHs (including water). Making relations with water through the reading of water involves making sense of details to build theories and explanations about the natural world in a way that is guided by our ethical responsibilities.

INDIGENOUS STEAM

ISTEAM is a multi-site community-based design research project that seeks to build thriving communities, composed of human and MTH life, through the regeneration of Indigenous systems of education. Rather than teaching *about* Indigenous culture, ISTEAM supports learning *through* Indigenous culture, creating the conditions under which Indigenous values and ways of knowing and being in the world can thrive (Deloria & Wildcat, 2001; Simpson, 2014).

ISTEAM creates the conditions for Indigenous thriving through two core principles. First, ISTEAM is fundamentally land- and water-based. It’s built on the premise that place matters for what and how we learn. In practice, this means that the entirety of ISTEAM takes place outdoors and involves learning about local ecosystems. Whether it’s going on nature walks to learn about plant medicines, checking for macroinvertebrates to gauge the health of a river, or listening to a story about Grandmother Cedar while sitting underneath a giant cedar tree, ISTEAM deliberately engages lands and waters as teachers for us to learn from. We not only engage lands and waters as teachers during ISTEAM but as co-designers when we plan for ISTEAM. We call this process “place-design” because we go out to where ISTEAM will

take place and plan activity around the learning opportunities the place affords. This represents an important shift from learning about lands and waters to learning *with and from* lands and waters.

The second way that ISTEAM creates conditions for Indigenous thriving is through family and community engagement. One of the main goals of ISTEAM is self-determination for Indigenous families and communities to decide the how, what, and why of learning. We do this through a process of community-based co-design where we engage families, Elders, and community members as designers and educators for the ISTEAM program (Bang et al., 2016). We have regular community co-design gatherings where we collectively imagine the kind of education that our children need to thrive and work to co-create learning environments that are grounded in Indigenous thought and lifeways. There's a wide range of participation in the co-design process. Some community members attend co-design meetings and help guide the program from a broader perspective. Others dig into the details, take lead in planning specific activities, and work as teachers at ISTEAM. It was through this work with community co-designers that we came to develop the conceptualization of Indigenous water pedagogies that we present here. That is, relations with water and reading water were the two main facets that community educators attended to in their interaction with children, families, and water. Lastly, as a community-based design research project, ISTEAM blurs and often outright rejects the dichotomy between researcher and participant. The authors of this article, all of whom are from Indigenous communities, not only engage in ISTEAM as researchers, but as community members, relatives, educators, and families with children, grandchildren, nieces, and nephews who participate in ISTEAM.

We use three examples of water pedagogies from two ISTEAM sites, the Pacific Northwest and the Great Lakes, to show different dimensions of water pedagogies involving river, ocean, and rain water.

CARE FOR THE CHICAGO RIVER

This first clip takes place in Chicago during a learning engagement with the Chicago River and involves gaining knowledge of histories and imagining possible futures. Students learned about the removal of a dam downstream, new regulations for water quality, and restoration efforts, all examples of humans remembering to respect the river again. This clip is from the beginning of an activity where students were asked to draw the “before” part of a “before and after” picture to support careful observation of the river ecosystem and to imagine changes that the ecosystem would be undergoing. We share this clip and the segments highlighted here because of the way that participants model an ethic of care for water.



1. Megan (Turn 1¹): *For me, the dam removal is really exciting and the changes and people deciding that this river deserves to be clean both for us, and all of our relatives that live here, means that human people are learning to respect these rivers again too. Okay so, you guys get to witness this and you get to decide are you going to honor that relationship with the river or not. And part of the way that we can do that is by looking really carefully and noticing what's happening and every year hopefully you will come back to our summer program. And in a few years, you could come back to this place and you'll be able to see what's different here, and I know you all were just noticing some things. So, human people have a really important relationship with this river. What else, why else? Who else benefits from having clean rivers?*

Megan, the facilitator, framed the removal of the dam in terms of human people remembering to respect the river again. By centering relations with the river, Megan grounded the discourse firmly within Indigenous ethical commitments to water. Specifically, Megan attributed personhood to the river by mentioning that the river “deserves to be clean” and positioning the river as worthy of respect in its own right, in alignment with Indigenous ways of knowing and being with water (Yazzie & Baldy, 2018; Wilson & Inkster, 2018). This provided an ethical anchor for the activity so that students’ learning was taking place in the context of Indigenous values and relations with water. Further, this ethical anchor created the relational conditions so that students were not just learning to observe the river, but considering how they might make decisions that would benefit the river ecosystem. This focus on environmental decision-making was made prominent as Megan linked the decision to remove the dam to the everyday decisions that students make in order to “honor that relationship with the river.” Lastly, in saying that “part of the way that we can [honor our relationship with the river] is by looking really carefully and noticing what’s happening,” Megan framed careful noticing and observations about the river as an act of relationality. In this way, scientific observation and knowledge about the river were inherently tied to making relations with the river.

At the end of Turn 1, Megan asked the group to consider “who else benefits from having clean rivers.” This shifted discourse to a conversation around different MTH beings who are also part of the river ecosystem and depend on clean water. In the following Turn, Megan discussed how the decisions that humans make go on to impact these other beings.

Megan (Turn 20): *So, when human people aren't respectful, we don't just hurt ourselves, we hurt all of our other relations too. So part of why we are here is so that we can actually notice and really remember that if we make better decisions, we can actually make decisions that are good for everybody.*

By shifting the conversation to the relations that MTH beings have with water, Megan makes an important pedagogical move that decenters humans from socio-ecological reasoning. While it is important to teach for human relations with other natural beings, focusing solely on human relations often leads to slippages where humans are positioned as central and superior to the rest of the natural world (Taylor, 2017). For example, Megan could have modeled care for the river by focusing on how *humans* rely on water to survive. However, by recognizing the ways that other beings depend on the river, the group was able to attend to the river’s relations beyond themselves.

In this clip, the scientific observation of water was tied to ethical relations and decision-making with water, highlighting relations as the most vital component of Indigenous water pedagogies. The group’s thinking was then extended beyond human relations with water to be accountable to the well-being of

1 The “Turns” indicate the speech Turns of participants. Turn 1 indicates that Megan was the first to speak. Later, Turn 20 indicates that there were 19 previous Turns taken. Turns skip in this article we could not include the entire transcript for the sake of space.

the entire ecosystem. Importantly, this engagement took place on the riverbank, and the ensuing activity involved direct observations of and interactions with the river. The act of physically being with water is central, as it creates a relational co-presence with water that generates new terms within which thinking and learning take place (Marin & Bang, 2018; Vossoughi et al., 2020). We argue that a similar discussion in a classroom would not have carried the same ethical and relational weight. Pedagogical practices and moments like these contextualize and frame encounters with water to support the cultivation of ethical relations and decision-making that foster thriving socio-ecological futures.

READING THE PUGET SOUND

The next vignette takes place in Seattle and involves making relations with, as well as learning to read, the Puget Sound in the Pacific Northwest. As the group of students walked to the beach for a series of learning engagements involving ocean currents and tidal pools, one of the camp Elders, Jeanette, stopped them at a hill overlooking the beach.



Jeanette (Turn 5): *So if you look out, the water is kind of—especially there's that one line there, right? That's detritus floating so why would it only float in a line? And that has to do with currents.*

After asking the students what they were noticing, Jeanette pointed out where the current was visible in the water. These attentional directives supported the group's reading of water. As the group jointly attended to their view of the Puget Sound—a complex visual field—Jeanette highlighted components of the field, such as lines in the water, to make the ocean currents visible to everyone else. Jeanette then drew the group's attention to the haze.

Jeanette (Turn 9): *I want you to look at the air. So that's the Olympic Mountains and that's Kitsap Peninsula and up north you can see the cliffs of Whidbey Island. What do you notice about the air?*

Child 3 (Turn 10): *It's different over there.*

Jeanette (Turn 11): *Yup?*

Child 3 (Turn 12): *It's foggier.*

Jeanette (Turn 13): *Foggier. Yeah, we call that haze. And so if you look that way, you can't tell quite so much but it used to be kind of brown. And the brown haze is probably pollution. But on hot days in Puget Sound, Puget Sound evaporates. The water evaporates and you're gonna be talking about this with Noelani, about salinity. So when all the water goes up in the air, it gets really hazy and what's*

left is water in the Puget Sound that gets a little more concentrated. And that means that it has more salt than other things in it.

In Turn 10, Jeanette invites the group to “look at the air.” Observing air might be an unfamiliar practice for some, but Jeanette’s prompt brings attention to something that is incredibly important to understand when reading water, which is the relationship between water and air. Jeanette also situated the air and water of Puget Sound in relation to nearby landmarks such as the Olympic Mountains, Kitsap Peninsula, and Whidbey Island. These directives helped scaffold the groups’ observations of water *in relation* to air and land. In these ways, Jeanette modeled how water should not be read in isolation, but always in relation to other parts of the natural world. This is not only key to Indigenous knowledge systems that recognize the world as composed of interdependent relationships, but to complex thinking that focuses on interactions within and between systems (Medin & Bang, 2014; Cajete, 2000).

In Turns 11 to 13, one of the students responded to Jeanette’s prompt by noticing how the air is “foggier.” Jeanette identified the fogginess as haze that has evaporated off the water (Turn 13). She connected the haze that they observed with the salinity of the water and pollution, phenomena that the group would be learning about later that day. Through these moments of observation and explanation, Jeanette was able to prepare the group for additional learning about these phenomena, demonstrating how, for ISTEAM, learning content is always connected to place. This vignette shows how the reading of water gives life to scientific concepts like evaporation and salinity by situating them in firsthand observations of the natural world. Transitioning from Jeanette reading waters with children to exploring the beach at low tide, Megan (Turns 14 to 23) shifted toward ethical ways of being with water.

Megan (Turn 14): *What is the one rule when we’re down on the beach? Riley?*

Child 5 (Turn 15): *No picking up rocks bigger than our heads.*

...

Megan (Turn 18): *Got it. Did everyone hear that? No picking up rocks bigger than our heads! And if we move a rock, what do we do afterwards?*

Child (Turn 19): *Put it back!*

Megan (Turn 20): *And how do we put it back?*

Child 5 (Turn 21): *With our hands.*

Megan (Turn 23): *With respect. 'Cause why? 'Cause we wanna put 'em back 'cause that's somebody's house, right? And we don't wanna hurt them.*

Specifically, she reminded students not to pick up rocks bigger than their heads (Turn 18), and to place rocks down respectfully (Turn 23). Here, Megan set expectations for how to make observations in a way that is respectful to MTH relatives at the beach. In Turn 23, she explained that these rules were in place because the students would be walking through other peoples’ (e.g., mussels, crabs, starfish, and more) homes and they should do so with respect. Megan recognized the MTH beings who live at the beach as people, and in doing so demonstrated how the reading of lands and waters is consistently linked to environmental decision-making. In other words, scientific observations are fundamentally connected to questions of how to live in ethical relations with water and water relatives.

Jeanette provided further scaffolding for students’ observations while at the beach.

Jeanette (Turn 24): *And also look at the top of the water way out and when you’re down there for two hours, every few minutes I want you to look out there and see how it changes and see what you notice.*

Jeanette asked the group to remember to “look at the top of the water way out” as they were also reading the tidal pools at the beach. This prompt helped scaffold yet another important observational practice.

Not only was Jeanette advising the group to keep paying attention to the water and how it might change. This pedagogical move also worked to facilitate perspectival shifts in scale. That is, Jeanette was implicitly encouraging the group to go back and forth from zooming in to the life that exists in the tidal pools to zooming out to observe broad changes in the current and the tides. The ability to shift spatial and temporal scales that Jeanette was scaffolding is key to both reading water and making sense of complex phenomena (Pugh et al., 2019; Wilensky & Resnick, 1999).

This clip beautifully encapsulates what it means to read water. The facilitators provided various attentional scaffolds to support students' reading of water in relation to air and to land. This allowed the group to connect their observations to concepts like salinity and evaporation. Further, scientific inquiry was intrinsically linked to ethical questions of how to support the well-being of water and water relatives. We argue for the urgency of outdoor learning experiences that create opportunities for this kind of place-based sensemaking. Constructing more ethical human-water relations toward thriving futures will require systems of education that grow children's ability to read and make sense of water as it exists in the natural world, and in a way that fosters complex thinking and an attunement to ethical decision-making.

“WATER IS BLESSING OUR EXPERIENCE”

This next vignette takes place in Chicago and involves interactions with rain. When talking about ISTEAM, a question often comes up: “How do you run outdoor learning environments when it's not nice out?” While innocuous enough, this question is rooted in assumptions that constrain the ways that humans relate to the natural world. Specifically, it enforces an orientation in which humans are apart from nature by implying we should only go outside when it's “nice out.” Further, the value-laden phrase “nice out”—typically meaning warm and sunny—implies a hierarchy of desirable and undesirable weather. Such a stance glosses over the fact that diverse weather patterns (e.g., wind, rain, snow, storms) are necessary for healthy ecosystems. Lastly, avoiding rain wouldn't be conducive to an educational program that seeks to build relations with all aspects of nature, including water.

This vignette shows how outdoor learning environments create opportunities for people to enact values in how they orient themselves to the weather. This interaction takes place during the same activity as the first vignette, where students were asked to draw their observations of the river. As it starts to rain, one of the students, Brian, exclaims:

Brian: (Turn 1): *Oh no, my paper got wet!*

Lawrence (Turn 2): *Yeah, it is gonna get wet. It's okay. Water is blessing our experience right now.*

Brian's interaction with the rain (Turn 1) was rooted in an assumption that rain was undesirable and interfering with human activity. However, one of the facilitators, Lawrence, took the opportunity to reframe how Brian was orienting to the rain (Turn 2). This pedagogical move by Lawrence reoriented toward Indigenous ways of relating with water by repositioning rain as a blessing rather than something to be annoyed by.

This vignette demonstrates how we navigate different values and construct human-water relations in real-time during an activity. These are ripe pedagogical moments where students and educators build with one another to construct new, more ethical relations in the present moment (Marin & Bang et al., 2018; Vossoughi et al., 2020). In this vignette, Lawrence's reframing steered away from dominant ways of positioning rain as a nuisance and asserted Indigenous values and ways of knowing and being with water. Learning to recognize and reframe thinking in these micro-moments is an important pedagogical practice that can lead to alternative emergent understandings and constructions of human-water relations at grander scales.

CULTIVATING ETHICAL HUMAN-WATER RELATIONS

In this article, we have emphasized the necessity of attending to human-water relations in order to adapt to changing lands and waters and build towards collective thriving for human and MTH communities. Dominant systems of education are largely rooted in paradigms that position humans as separate from and superior to the natural world and position water as an exploitable resource for human use. This points to a need for systems of education that are rooted in respect and reciprocity, where concepts like the molecular composition and phase changes of water are situated within firsthand observations, relations, and ethical commitments to place. We put forth a model for Indigenous water pedagogies to cultivate learning toward more ethical human-water relations. Indigenous water pedagogies involve 1) making relations with water and 2) learning to read water. Together these two dimensions support ethical decision-making and complex thinking about and with water. After reviewing the clip involving haze in the Puget Sound, it has become apparent to us that air, which consists of water, is another aspect of place-based education that is under-articulated, even more so than water. A future direction is consideration of relations involving air in land- and water-based (and air-based?) learning environments.

Cultivating more ethical relations with water involves shifts across multiple scales, from the broader structuring of learning environments (Where does the learning take place? What's being taught? Who teaches it, and why?) to the finer pedagogical details that involve the "how" of learning. We provided a brief overview of an Indigenous STEAM program to offer one example of how learning environments can be structured toward more thriving futures for humans and MTH communities. The vignettes offer examples of pedagogical moments that (re)frame thinking and construct human-water relations in real-time. By working across multiple spatial and temporal scales, we hope to build futures where human communities are able to live in reciprocal relations with water and the rest of the natural world

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Hands Back, Hands Forward: Expanding the Circle of Indigenous Storyworkers

Jo-ann Archibald Q'um Q'um Xiiem

Ey Swayel (Good Day, in the Halq'emeylem language). My Indigenous name is Q'um Q'um Xiiem, which means Strong Clear Water. I am a member of the Stó:lō Nation, specifically the Soowahlie First Nation¹, adjacent to Cultus Lake in southwestern British Columbia. I also have ancestry in St'at'imc Nation, Xa'xliip First Nation, near Lillooet, in the interior of British Columbia.

An Indigenous teaching that has guided my life, both professionally and personally, comes from Tsimilano, Elder Dr. Vincent Stogan of x^wməθk^wəyəm (Musqueam).² He was a leader, teacher, and mentor to many. At the beginning of our gatherings, we often formed a circle. Tsimilano had us hold our left hand out with the palm facing upward to signal the respectful action of reaching back to receive the teachings—knowledge and values—from the ancestors and those who have traveled on our pathway before us. It is our responsibility to think of ways to put these teachings into our everyday actions. He then had us extend our right hand with the palm facing downward to symbolize sharing those teachings with others, particularly the younger generation, which is also an action of reciprocity. We then joined hands in the circle to unite the past, present, and future.

In this reflective essay, I use Tsimilano's Hands Back, Hands Forward teaching to discuss an Indigenous pedagogical approach called Indigenous Storywork³ (Archibald, 2008), which emerged from my research with Stó:lō and other Indigenous Elders and cultural knowledge-holders.

HANDS BACK FOR UNDERSTANDING AND DOING INDIGENOUS STORYWORK

In the early 1990s, I reached back to the Stó:lō Elders, who in the 1970s had formed the Coqualeetza Elders' Group for cultural reclamation and revitalization purposes, along with other projects.⁴ I had established learning relationships with many of these Elders during the late 1970s and early 1980s, when we worked on an elementary school curriculum project that included some of their remembered stories. The focus of that curriculum was to identify Stó:lō stories for elementary school students and to develop story books for this purpose, along with cultural resources and inquiry lessons. This time, I was ready to learn more about ways to make meaning from and with stories, which we had only briefly introduced in the earlier curriculum.

The Stó:lō Elders, Coast Salish Elders, and other storytellers mentored me through talks about the epistemological nature of Indigenous stories, explaining how stories were a part of their everyday lives and how they learned from stories. I also spent much time in nature—especially along river banks, by the ocean, and in forests—where I developed a sense of reverence for both nature and the power of stories to educate and heal from the intergenerational impact of colonization. The seven Indigenous Storywork (ISW) principles of respect, reverence, responsibility, reciprocity, holism, inter-relatedness,

1 I use the term, Stó:lō Nation, for broader cultural and geographical purposes. The Stó:lō traditional and unceded territory extends from Langley to Yale, British Columbia. There are various Stó:lō political organizations, one of which is called, Stó:lō Nation that provides various services to 11 Stó:lō communities: www.stolonation.bc.ca

2 x^wməθk^wəyəm (Musqueam) is a First Nation located in the Vancouver area of British Columbia, which is a small part of their traditional territory. See the Musqueam website for more information: www.musqueam.bc.ca

3 Indigenous Storywork is a theoretical, methodological, and pedagogical framework. For the purpose of this essay, its pedagogical nature is emphasized. See this website for more information: indigenoustorywork.com

4 My historical reflective perspectives are detailed in my book, *Indigenous Storywork: Educating the Heart, Mind, Body, and Spirit*, published in 2008 by UBC Press.

and synergy emerged from my lived experiences. As I lived the ISW principles in my educational and research practices, my understandings of them deepened. Along the way, I also needed to name the Indigenous framework for these principles.

The name, Indigenous Storywork, came about in this way. Years ago, in Stó:lō and Coast Salish gatherings, the Spokesperson, who facilitates the cultural work on behalf of the hosting family, would say, “My dear ones, the work is about to begin.” When the guests heard these words, they knew that it was time to give serious attention to the activities. With Indigenous stories, I thought that serious attention was needed for understanding the beauty and power of Indigenous traditional and life experience stories to educate the heart, mind, body, and spirit. My experience with educational systems at all levels was disheartening because of how Indigenous ways of knowing and being, particularly stories, were excluded, belittled, or misunderstood. I reached back once more to Indigenous ways and brought the notion of work together with story to signal an epistemological and pedagogical change, guided by Indigenous Storywork.

HANDS FORWARD FOR INDIGENOUS STORYWORKERS

In 2017, I retired from my professional work at the University of British Columbia, but like the Stó:lō Elders, my commitment to continuing this intergenerational storied learning process continues. In 2019, I joined hands with public school teachers, school district educational leaders, and the Coqualeetza Cultural Education Centre (Coqualeetza), to revitalize the educational implementation of Stó:lō stories, which the Coqualeetza Elders had developed for school curriculum in the 1980s and 1990s. The curriculum was named the Stó:lō Sítel. In the Halq’emeyelm language, sítel means a basket used to store treasured items. Those who worked on this curriculum considered the Stó:lō stories to be like treasure to be cared for and valued.

The Elders had carefully remembered, documented, and guided the representation of their stories so that all students had the opportunity to learn about Stó:lō history, culture, and contributions from Stó:lō perspectives. Over the years, a part of this curriculum, in the form of story books, sat on library book shelves or in closets. Teachers who found them often commented that the books looked outdated and that they were not sure how to use them with current curriculum guidelines. However, there were a few Indigenous/Stó:lō educators who knew the timeless value of these stories and were keen to mentor teachers in Indigenous story pedagogy and to work cooperatively for this purpose.

We formed a Stó:lō Sítel Working Group of about 15 school district and community-based educators where we learned about the Indigenous Storywork principles; with K-12 teachers from various school districts, we developed story-based pedagogies that were place-based/in nature, experiential, inter- and intra-generational, and included Indigenous community members. Stó:lō Sítel Working Group members and teachers then shared these pedagogies and sparked more ideas, as well as discussed challenges. Some of the Stó:lō Sítel Working Group members were descendants of the original Coqualeetza Elders’ Group who had developed the Stó:lō stories.

My role with the Stó:lō Sítel Working Group was, and continues to be, both a mentor to and learner with them. I was fortunate to learn from the original Elders, which is similar to the Hands Back teaching. These Elders mentored me through storied and experiential pedagogies. Then, I had the responsibility to place the Elders’ teachings into educational practices. I developed the Indigenous Storywork framework, I engaged in ISW, and I shared its pedagogical potential through various mediums and contexts. In extending my hand forward to the Stó:lō Sítel Working Group and K-12 teachers, who are current-day storyworkers, I have made a personal commitment to continue the Elders’ various teachings with the hope that many more storyworkers will join this Indigenous Storywork circle, thereby uniting—once again—the past, present, and future.

I RAISE MY HANDS IN THANKS AND RESPECT

It has been 50 years since the Stó:lō Elders began to collectively remember, reclaim, and revitalize their Stó:lō knowledge, especially their language, culture, and stories. Many Elders have said that their knowledges and stories were put to sleep during the decades when it was illegal in Canada⁵ to practice Indigenous cultural traditions, and where Indigenous languages and culture were denied in school systems, particularly the Indian residential schools. The Truth and Reconciliation Commission of Canada called these actions cultural genocide (2015). Yet a core group of Elders kept this precious knowledge alive in their hearts, minds, bodies, and spirits until it was safe to openly share their stories.

It has been heartwarming for me to realize that some descendants of these Elders have become educators and cultural knowledge-holders who are continuing cultural learning that includes the storywork process with their family members, learners of all ages, and others. This inter- and intra-generational engagement is a form of Indigenous epistemology and pedagogy. It is a long-term commitment and it is difficult to maintain in Western-based educational systems that do not recognize or value the pedagogical and educational significance of Indigenous stories. Another important source of stories, often overlooked, is found in Indigenous community-based cultural centres.

The Coqualeetza Cultural Education Centre was established in 1973 by various Stó:lō lands/communities as a not-for-profit charitable organization to offer cultural programs determined by Stó:lō people (Archibald, 2008). The Elders' group became a core program of Coqualeetza, and it continues today. This centre has provided cultural hands-on activities, such as basket-making, cedar bark collection, plant gathering, and summer camps to preserve fish. It has also undertaken documentation of many aspects of Stó:lō culture, language, and history, and has offered cultural education to many. Over the years, a rich trove of archival material has been collected that includes cassettes and videotapes, transcripts of individual interviews with many Stó:lō Elders and cultural knowledge-holders, and photos of places in Stó:lō territory, especially along river systems with documentation about the Stó:lō place names.

Coqualeetza is beginning a longer term project to digitize the earlier recorded material that is now an outdated technology, making it inaccessible to many. Updating the technological accessibility and format of archival material will offer more resource material for Stó:lō community/family members and teachers. There are many more Indigenous cultural centres across Canada that serve the same important purpose as Coqualeetza. They are an invaluable knowledge source and educational support for developing Indigenous pedagogies and curriculum resources despite their ongoing challenges of securing recognition of their expertise and sufficient funding for their educational projects.

In Stó:lō tradition, at gatherings, guests show appreciation and respect for the good work of people when we raise up our hands with our palms open. I raise my hands in thanks and respect to the Coqualeetza Elders who followed the tradition of sharing their knowledges with current and future generations. These Elders enacted self-determination by leading and directing how their stories were told and represented for educational purposes. Most importantly, their family and other community members have been taught their Elders' values and stories, which continues the cycle of learning. I raise my hands in thanks and respect to Indigenous community-based cultural centres for demonstrating persistence in continuing to revitalize Indigenous knowledges.

Tsimilano told us that the Indigenous circle of caring, sharing, and knowing always has room for anyone who wants to join hands in this way. The expanding circle of Indigenous Storyworkers will continue to carry on the Hands Back, Hands Forward teaching, and it has room to join hands with you.

5 From 1884 to 1951, the Canadian federal government outlawed the Potlatch, which was a major cultural system for First Nations people, where cultural laws, kinship, history, stories/dances/songs, marriages, births, deaths, and much more were either noted or carried out (Royal Commission on Aboriginal Peoples, 1996).

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A Pedagogy of Water: The Rio Grande/Rio Bravo as Ancestral Waters

Marissa Aki’Nene Muñoz

At the beginning of the day the water was warm, and it was flowing smoothly, slowly. You know, you could bathe in it, and just walk into the water, and stay there. But once the sun started going down, you could see even the flow of the water was coming more rapidly, and the water was becoming mas fria, getting colder. And tambien del current and... la marea. The tide would start to get high, you know, during the day, you would stand in the middle of the water, and the water level would be just under your knees. And by maybe 6 o'clock or so, ya, it was up to about mid-thighs, aqui, más o menos. You would get out, because you could feel the current getting stronger.

You already knew, because our parents would tell you, "Te tienes que salir, porque el río es un traidor." Tú lo ves and it's flowing smoothly, tranquilito y todo, pero, you get in and get to a certain area, and it has undercurrents, and it pulls you. There is no way to stop from going with the current. So we knew, we were aware, and we took care of what we did. Y decían los adultos también: "¡Hey salte, salte!" "Aye, no, I'm having a good time." There were a lot of kids at that time. Estábamos todos chiquitos so you know that not everybody would mind. Nosotros oíamos: "No se quiere salir Norma del río!" Y allá van—the grownups would go and get you outta there, because they knew. They knew more about the river than we did. (J. Ramirez, oral communication, February 2, 2016)

This story was shared by my great auntie, my gran Tia Cheffie, as four generations of women and girls from our family sat around the kitchen table, listening, laughing, and taking turns caring for my infant, Ofelia. It provides a beautiful example of how community members think and talk about the river, how the process of remembering calls forward other stories, and how concepts flow into each other within one conversation. The river, which flows almost 1,900 miles from Colorado to the Gulf of Mexico, is called Rio Grande in the US and Rio Bravo in Mexico.

My Tia Cheffie was sharing her memories of the river, deeply embedded within the familial context, speaking to me as great-niece rather than researcher. In this article, I share my educator response-abilities (Kuokkanen, 2007) and responsibilities in the development of a land-and-water-based pedagogical approach called an Indigenous Fronterizx Pedagogy of Water, specific to re-storying the Rio Grande/Rio Bravo as ancestral waters.

My name is Marissa Aki’Nene Muñoz. I am Xicana Indigena, rooted on both sides of my family to the city of Laredo, Texas, on the banks of the Rio Grande/Rio Bravo. On my mother’s side, we trace our roots to the Esto’k Gna, Coahuiltecan, Tlaxcaltecan, and Guachichil peoples of the greater region. On my father’s side, we trace to the Wixairika communities from the Real de Catorce region of San Luis Potosi, Mexico. The Rio Grande/Rio Bravo is my ancestral waters, which serves as a map read lengthwise, connecting my genealogy through countless generations to Indigenous relatives both up and downstream.

In this article, I write as an engaged granddaughter/daughter/mother, fronteriza, sixth-grade teacher, and teacher educator. This project of re-storying the Rio Grande/Rio Bravo as ancestral waters is based on collective remembering, testimonies, listening, and making connections between the land, river, and the Indigenous communities local to Laredo, Texas. Indigenous knowledge has survived

in our collective memory in spite of detribalization, accounts of Indigenous extinction, and ongoing militarized and carceral border violence.

The purpose of the project was to use re-storying as a creative and intuitive pedagogical practice to guide our way through the intergenerational memoryscape (Riaño-Alcalá & Baines, 2011) to restore and re-story ourselves back onto/into/with our ancestral river and lands. Specifically, in engaging the collective memory of an inclusive binational, intertribal, urban, Native, and Indigenous community of Elders and knowledge-keepers, this project is not focused on the specifics of tribal identity or any particular cultural or language-based epistemology. My goal was to excavate under the many layers of colonial occupation and ongoing militarized border violence to unearth the shared Indigenous knowledge and ways of knowing that have survived within my home community, connecting us to our ancestral waters, the Rio Grande/Rio Bravo.

RIVER/BORDER BACKGROUND

I was taught to begin with the ancestral languages so that the land understands when we call it by name. In Carrizo/Comecrudo language, the land is called Somi' Sek (Mancias & Torres, 2015). In English, it is named Texas. In 1848, the signing of the Treaty of Guadalupe Hidalgo formalized the occupation of Rio Grande/Rio Bravo as an international border, forever changing how people and communities relate to both the river and water in the region. These connections have shifted dramatically over time, most noticeably in how the mainstream media in the United States has sensationalized depictions of border life with little to no acknowledgement of the river. Further complicating the tension for border communities is the ongoing militarized occupation by the US Department of Homeland Security in response to both the "war on terror" and the "war on drugs" (Fregoso, 2007; Saldaña-Portillo, 2017). The uniformed and heavily armed agents have altered the landscape not only by their physical presence, but by the heightened tension and psychological dominance that permeate all aspects of daily life. For the locals who live in my community, the presence of armored vehicles and machine guns in public spaces make it easy to forget that our life-giving ancestral river is immediately close by.

However, Laredo/Nuevo Laredo community members understand the river, the land, and themselves differently from most mainstream depictions of border life. In the last 40 years or so, within my lifetime, I have witnessed a change in how we know, live with, and talk about the Rio Grande/Rio Bravo in my community. Elders tell stories of when the river used to bring the community together, before border politics split our community into two distinct halves. The river is ever-present in conversations about daily community life, and our collective memory of the river has shaped peoples' bodies, the landscapes, and the ongoing daily practices of the community (Riaño-Alcalá & Baines, 2011). As the younger generations face increased restrictions and very limited access to the waters that nourish all life in the greater region, I was inspired to document the stories of the Elders specific to our Rio Grande/Rio Bravo to restore and restory how our youth understand themselves within the relational ecology we call home.

LEARNING FROM ELDERS

My maternal family is connected to the communities in and around Laredo, Texas, going back 12 generations and beyond to several local ancestral communities. I have been nurtured by Elder relatives and community knowledge-keepers who identify as Indigenous and Native in many ways. I focused on learning from the Elders and community knowledge-keepers to whom I am accountable, inclusive of all of the ways that ancestral knowledges are practiced in the greater territory.

In the literature, I was inspired by collective memory, which seeks to understand how a community subjectively constructs meaning from historical events, which often include interpretations, emotions,

reflections of identity, and political positions (Hom & Yamamoto, 2000). Stories and testimonies are interwoven with the commentary and are framed toward particular ends that serve both individuals and the group. Wertsch and Roediger (2008) explain that "collective memory is more like a space of contestation than a body of knowledge—a space in which local groups engage in an ongoing struggle... to control the understanding of the past" (p. 319). As an academic field, this multiplicity of voices made space for decolonial, anticolonial, and insurgent voices from both sides of our river, as a fraught international landscape of unequal power that is manifest in places, on bodies, and through voices and ideas (Castillo & Tabuenca-Córdoba, 2002). Multiplicity invites multiple authentic meanings.

Collective memory also works to narrate historical events from an embodied and emplaced perspective (Riaño-Alcalá & Baines, 2011), and is automatically positioned as a form of resistance against imposed dominant narratives of history (Seixas, 2004). In contexts of ongoing violence, written records are often systematically destroyed. Oral traditions that include collective memory serve as living archives (Riaño-Alcalá & Baines, 2011) to give accounts of the histories, contexts, and meanings of/with/in communities to counter the dominant colonial narratives, normalized through intellectual colonialism (Castillo & Tabuenca-Córdoba, 2002; Gaudry, 2011; Rodríguez, 2014). Despite these formal narratives, the community remembers both as individuals and as a collective, the unrecorded, undervalued, and unrecognized histories and shared experiences of survival.

By extension, collective memory is not abstract. It consists of embodied and emplaced knowledges, including the multisensory ways that we know where and how beings/bodies move through space and in places. *Embodied* refers to the critical awareness not only of our bodies in relation to other bodies, but also an awareness of the impact of our surroundings on our physical being (Nayak, 2011). Our bodies are physical receptors and transmitters of relationship to our surroundings, as well as the means through which we understand relationships in space, encoding meaning through learning, emotions, and experiences (Cobos, 2012; Lara, 2014). Similarly, the term *emplaced* refers to the knowledge held in specific locations, as well as how beings find and/or make meaning in particular spaces as part of the processes of witnessing, remembering, and storying (Riaño-Alcalá & Baines, 2011). Though distinct concepts, the terms are often mutually co-constructed, and within stories of collective memory, provide context and meaningful landmarks for understanding collectively shared experiences.

(RE)STORYING THE LAND, (RE)STORYING THE RIVER, (RE)STORYING OURSELVES

Practices of storying, which includes story-telling and story-listening (Archibald, 2008; Razack, 1993), often encode worldviews, ecological knowledge, cultural norms, ethics, and values to create meaning (Martinez, 1998; Smith, 1999). Restorying speaks back to the dominant narratives to make space for Indigenous knowledges—to recover, remember, and revitalize the cultural knowledges of the community and land. Corntassel, Chaw-win-is, and T'lakwadzi (2009) remind us that restorying is an intervention against colonial narratives that can revitalize individual and collective consciousness. And the use of punctuation in *restor(y)ing* or *(re)storying* serves as a grammatical reminder of the mutual processes of the restoration of Indigenous knowledge through storying and restorying.

Nxumalo and Villanueva (2020) use the phrase *refiguring presences* as a pedagogical practice that affirms Indigenous life, land, and relations as co-constitutive entanglements of human and more-than-human life. I expand on this practice by intentionally referring to humans as *beings-in-relation*, to shift our attention to the verb of *being* and to the specific ties and relationships of *always being-in-relation to other beings* (Bang & Marin, 2015; Cajete, 1994, 2000; Tuck, McKenzie, & McCoy, 2014). Similarly, Indigenous knowledge systems refigure notions of ecology to be *relational ecologies*, in which a dynamic and responsive network of intra-dependent beings share places, resources, and life within an ecosystem (Archibald, 2008; Cajete, 1994, 2000). The phrase *relational ecology* makes explicit the decolonial

intervention to interrupt the anthropocentrism and constructed separation of humans from the non-human world of environmental education (Bang & Marin, 2015; Barrett, 2012; Nxumalo, 2021; Nxumalo & Villanueva, 2020), and move toward the response-ability (Kuokkanen, 2007) of all beings.

Centering Indigenous knowledge engages a healing process of recognition, creating safe spaces from which to approach the embodied and emplaced stories of collective memory. In this way, I suggest that the intergenerational storytelling, restorying, and sharing of collective memory can help refigure the presences of the people, land, and Rio Grande/Rio Bravo, restoring our ancestral relational ecologies. By (re)storying the land and river, we (re)story ourselves, our youth, and collective futures.

WHY WATER?

Water is universal to all life. Water, by its very nature, provides countless stories, metaphors, and images for understanding. In the specific landscape of the frontera, the Rio Grande/Rio Bravo is the primary, and often only, source of potable water for a huge watershed community. In the Statement on Water and Indigenous peoples, presented to the 10th Session of the United Nations Permanent Forum on Indigenous Issues, the Global Indigenous peoples Caucus (2011) articulates, “Our Mother Earth nurtures, shelters, and nourishes us, and we are spiritually connected through her waterways—veins and arteries to the plants, animals, places.... Water is sacred, water is life.” In other words, water makes life possible, not as a process that animates individual humans, but as a spirit that connects us to all beings in creation, in which humans are small elements in the dynamic system of life. Water does not bring us to life; the water in us *is* life. For my home community, the Rio Grande/Rio Bravo is life.

For example, Mrs. Bernal Flores, a knowledge-keeper and retired educator, now lives closer to the center of town, but she recalls the significance of the river to her childhood, growing up in her parents' home, a block and a half from the river.

The river? My dad used to take us to it. The river was the playground. I learned how to swim in the river. My dad would take us fishing.... But my fondest [memory] is at night when I could hear the river, the sounds of the river. When I would go to sleep, I would leave the window open and I could hear it. Barely... but you could hear it. Everything... it provided for us and was the significance for us growing up there. (P. Bernal Flores, oral communication, June 8, 2014)

In Ms. Bernal Flores' story, we can understand a particular dynamic that is true for many of our community members who live in/with/near the Rio Grande/Rio Bravo—our river is at once sacred and forgotten. It nourishes all life, provides us with everything we need to live in the arid landscape, yet it is no longer a part of daily life in the busy community that Laredo/Nuevo Laredo has become. The river has not changed. We, as a community, have. In listening to the Elders, we not only remember the significance of the river, but also who we were/are as people of the river. In a community bisected by a river, everyone has stories of the Rio Grande/Rio Bravo.

RESPONSE-ABILITY: PEDAGOGY-MAKING AS METHOD

As an educator, I chose to enact my responsibilities and response-abilities as a deeply embedded participant in this system of intergenerational knowledge. My dual roles as learner (as I was listening to the stories of my own Elders) and as teacher (as I pass these teachings to the next generation) constitute the two fundamental aspects of building and nurturing responsive pedagogy. I have come to understand the first half of the research project, including the travel home, inviting community members, visiting, listening, and facilitating the interviews to be the Learning Phase of my pedagogy-making process (see Figure 1).

The second part, the Teaching Phase, included selecting the teachings, building context, representing knowledge, and connecting with learners. While each phase is distinct in terms of whether information is being received or relayed, learning and teaching are mutually constituted, shaped by context in a responsive and reflective pedagogical practice.

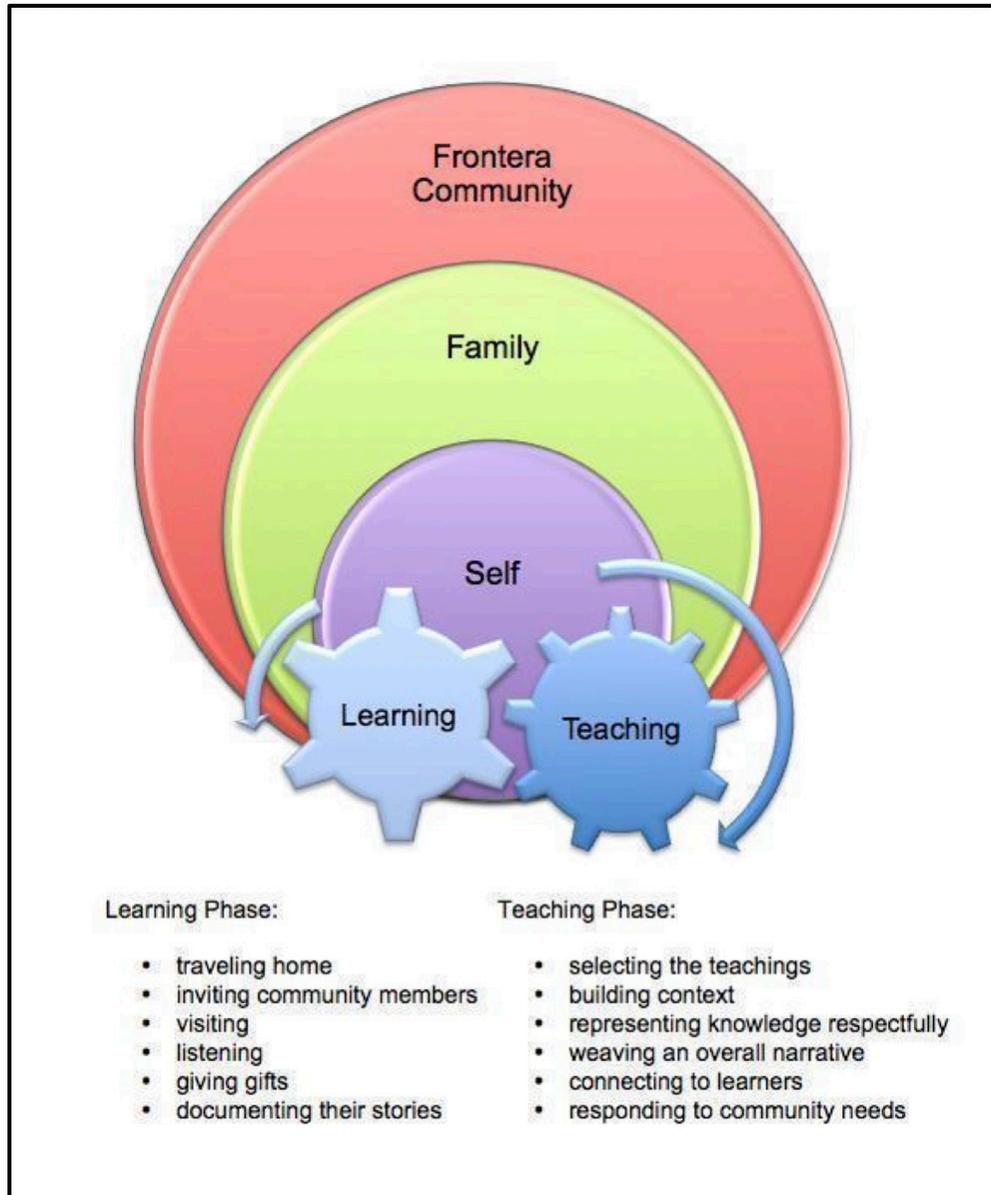


Figure 1. Intergenerational Pedagogy of Indigenous Knowledge

Although the goal was to document 10 to 12 life stories, I completed 26 oral histories of lives lived with/ in the Rio Grande/Rio Bravo, creating a changing portrait of the river through time. Water, land, and people were central themes in the stories shared by Elders, and I organized and paraphrased their stories into a summary of Water Thinking (Figure 2) and a summary of Border Thinking (Figure 3).

WATER THINKING: River-as-Water concepts (paraphrased)

River as LIFE

- Water as universal to all life
- Water is life. No water is death.
- No river, no water, no Laredo.
- The river is alive.
- River is life, our source of life.
- River as relief from the arid environment
- River as a wild animal that has never been tamed.
- River a baptismal font (literally), a sacred place

River as IDENTITY

- The river is a big part of us, as part of our identity.
- The damage we do to the river, we do to ourselves.
- No water would be our death physically, and also, culturally. Culture lives here.
- River as coded language for locals, as a reflection of the social conditions. For example, “Que mugrero trajo el rio!” [The river has brought such trash here!]
- El rio es lo que une a las comunidates. [The river is what unites the communities.]
River as the uniting factor between the sister cities, unites each side as one community.
- River as family member. “We speak of the river as we speak of a mutual relative or mutual friend.”
- “El rio es un traidor.” [The river is a traitor]

River as LAND/PLACE

- If there was no river here, the border would have no meaning – It is just another dusty town. The river has the meaning.
- River is a conduit that connects all life, conduit for information, and conduit for culture.
- The river is a map to the medicine, lengthwise. The Rio Grande/Rio Bravo is the basis of our relationship with our medicina, peyote.
- Places holding history and memories – you have to go there to hear the story to understand.
- River sounds are the soundtrack for home, relaxing.
- The river as recreational place, entertainment, adventure, as a playground, belonging to the locals.
- River as a fishing resource.

Figure 2. Water Thinking

BORDER THINKING: River-as-Border concepts (paraphrased)

Border as a THING

- The river/border is an obstacle, a hurdle to overcome
- The bridge is a trap that catches cars in traffic. Walking is faster.
- The river/border belongs to the Border Patrol and government interests.
- River/border is a one-way barrier.

Border as a SPACE

- The river/border as a transition – you don't spend time there; you go through it.
- River/border as a place where people change. You have to switch your thinking to the other side before you leave.
- River as untouchable. It is just a place for objects to pass over via bridge.
- River/border as boundary to keep people in or out.
- River as protection, a buffer zone.

Border as a MARKER OF POWER

- Oppositional binaries (i.e., first-world versus third-world, legal versus illegal crossing, visible wealth versus visible poverty, good versus bad, Europeans versus Indigenous).
- As an unequal, unfair relationship.
- River/border as a source of income due to the boundary.
- The river as protected by armed security, but this makes it unsafe for people to go there or be there.
- River/border as a place of one-way communication, one-way policy.

Border as ARBITRARY

- Border as the wall that divides two rooms of a house – it's still the same house.
- Border as unremarkable, trivial, or commonplace – crossing the river/border was like crossing the street.
- The river itself as a neutral ground for the nurses of the Cruz Blanca during the Mexican Revolution.
- The river brings families from both sides together; the border is what tries to keep families and people apart. People will always find a way.

Figure 3. Border Thinking

A secondary analysis included looking for evidence in the stories to explain the shift in perception between River Thinking and Border Thinking, which is paraphrased in Figure 4.

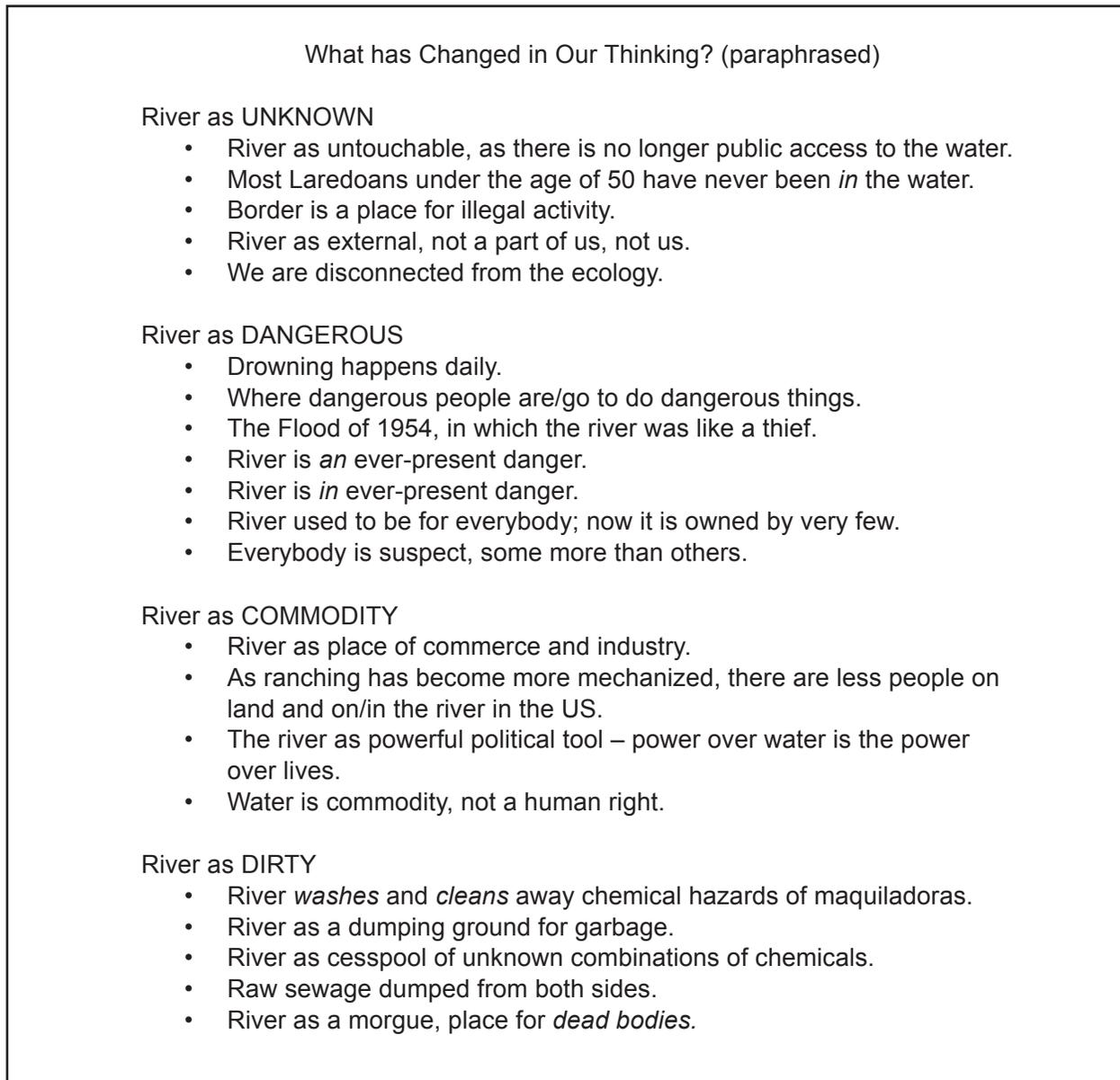


Figure 4. The Shift from Water Thinking to Border Thinking

The progression of Water Thinking to Border Thinking is directly tied to changing policies and increased border security over time. To restore our Rio Grande/Rio Bravo and rivered community is to peel back the many newer colonial meanings, symbols, and understandings of Border Thinking to revitalize ancestral Water Thinking so that the multiple ways of being and knowing are in conversation. As a teacher, I see it as both a responsibility and response-ability (Kuokkanen, 2007) to facilitate that shift through pedagogical interventions. As such, this project moves toward a transformative potential by building an Indigenous Fronterizx Pedagogy of Water from the banks of the Rio Grande/Rio Bravo, to connect our community within our relational ecology through ancestral knowledge.

BUILDING A RESPECTFUL TEACHING PRACTICE

In my current role as a teacher educator in Texas, I have not (yet) had the opportunity to fully implement the Indigenous Fronterizx Pedagogy of Water with youth. There is a natural fit for teachers of ethnic studies, and specifically the American Indian/Native Studies for middle and high school students, in which water could easily serve as the topic for a multi-week unit plan connecting concepts of land, water, family, community, relational ecologies, and culture through interdisciplinary projects. Similarly, for K-12 teachers, different aspects of this Pedagogy of Water can be taken up and integrated into mainstream content as lessons, projects, or short units by purposefully connecting grade level standards and scaffolding with developmentally appropriate and accessible skills.

While the approach to Indigenous knowledges of water is generalizable and important for all learners, the project of collecting local water stories could happen with learners at any grade level, in any community. Understandably, teachers may have to adapt the instruction to address their specific communities, local watersheds, and local Elders and knowledge-keepers according to the local cultural protocols. Mutually respectful relationships and shared knowledge is foundational to this approach; as such, project outcomes and student work could be shared back with community members as a practice of reciprocity and collective nurturance.

To further illustrate the possible ways water stories can be integrated into existing classrooms, consider the following two examples.

Example 1: Dr. Calderon Porter

Teachings are not always direct or literal. Oftentimes, the listener is guided to reconsider the relationships between things—inclusive of self, family, community, and world contexts—each in relation to the others.

The whole of Laredo culture is about the river. Our culture is distinct from any other border town. The way the river separates the cities is a friendly separation.... There are parts of it through ranches that you could walk across. There are parts of the Rio Bravo that cattle walk across, they become international cattle, and nobody likes that [laughing] but you can't control that. But how are we different from the other sister cities? I think we're different in what we're called. Look at what this border did. We are Laredo and Nuevo Laredo. It's the same name. We are not Matamoros/Brownsville, and we are not Reynosa/McAllen, and we're not Piedras Negras/Eagle Pass. We are Laredo/Nuevo Laredo, and it's symbolic that we were one community. (M. E. Calderón Porter, oral communication, June 13, 2014)

Teaching Phase 1

For people who do not live in frontera communities, it is easy to conflate the river and the border because on a map, these two places appear to be inseparable. For community residents who live along the Rio Grande/Rio Bravo, the river is distinct from the border, and each serves a different function, as is made clear in the quote above. In just a few sentences, Mrs. Calderón Porter explains what, for her, is common knowledge—that the river and communities preceded the border. The formation of the border split communities into halves, which we now call sister cities, but for the people living in the communities, it is one big community.

In using the sister cities metaphor, we can understand the interdependence of the communities on each side of the river, related by blood, genealogy, history, and ecology. The river, understood as a life source, is what brings community on each side together, while the border works to separate and divide. Although both may exist in the same relative location across the landscape, we can start to understand the juxtaposition of irreconcilable demands that make life in/on/along/between the two challenging.

The difference between River Thinking and Border Thinking is an essential distinction that gets at the heart of what the Rio Grande/Rio Bravo means in the lives of the Laredo/Nuevo Laredo community members, and how these concepts have shifted within one lifetime.

Based on Dr. Calderon Porter's account of the sister cities, I would ask students to map examples of the sister cities and connect these lessons to social studies standards related to reading maps or graphic depictions. A companion lesson could include having students research the history of a pair of sister cities and represent significant events on a timeline, showing how the pair of communities has influenced each other. In science, I'd have students examine watershed maps or ecological push-and-pull factors that might move populations back and forth between the sister cities.

Example 2: Mr. Muñoz

Some of the land-based knowledge we can learn through the stories is not general, but very specific to particular places in our local river ecology. Mr. Muñoz, a knowledge-keeper, shares:

Tia Josefa in particular, Tia Josefa was my curandera. She knew to curar de susto, how to deliver babies, she had all kind of herbs in either alcohol or vodka. I knew if it was in a vodka bottle it was stuff that we were going to be drinking. If it was in an alcohol bottle, I had to bring the alcohol, go buy her the alcohol; sometimes it was a whole nickel for alcohol. It wasn't for drinking, it was going to be something that you would rub.

She would say, "Alright," she'd hand me a plant and she'd say, "See this plant?" Then she gave me a paper bag, and she'd say, "Fill this bag with this kind of plant." Or she'd give me two plants and she'd say, "Give me a bag of this and a bag of this."

And I remember I asked, "What are you going to use it for?" She goes, "son para mis remedios." Every once in a while she would tell me, what the remedio was and what it is going to be for. I wish I had remembered and I had asked more questions now. But in her kitchen there was a cupboard that she had with all the remedios. Some of these plants that I would get her they would be in like mason jars. No labels, she'd just do it. She just knew what was for what. So the plants that she would put in mason jars, was for making teas, the plant that she would put in vodka that was going in to mason jars with plants, would be for your drinking, and whatever went into alcohol was going to be for rubbing. So, she had a bunch of them, a bunch of them. Like I said, I never knew what I was gathering, I just knew that I was helping her get some of her medicinal remedies. (O. Muñoz, oral communication, May 10, 2015)

Teaching Phase 2

The Laredo/Nuevo Laredo region of the river is one of several critically endangered niches nurturing a rich biodiverse community of species not found anywhere else in the world. Many locals know the flora and fauna and cultivate spiritual ways-of-knowing specific to the community and our local ecology. As a child, Mr. Muñoz knew that some of the plants found on the riverbank were medicinal plants, which his auntie Josefa knew how to use to heal people. Mr. Muñoz's story reminds us that the land, river, and people are not considered separate entities, but instead, an interconnected network of living beings in the ecologies along the Rio Grande/Rio Bravo. Understandably, the practice of traditional plant medicines is more widespread in communities that have free access to their medicinal plants. Along the Rio Grande/Rio Bravo, the increase of border security has made cultural practices more difficult and dangerous to continue, as our river ecology are the only natural habitats where these local plant medicines grow.

If I were to use this water story in the classroom, I could focus on the development of medicines, ancestral foodways, and holistic health by connecting to a citizen science population monitoring

project, or a habitat restoration effort. We could integrate field journaling and discuss honorable harvesting practices while out in nature. In a history lesson, students could research and illustrate the many knowledge contributions of our local ancestral cultures by creating zines based on different water stories. In science, we could integrate chemistry to address the extraction process, or biology to discuss niches, endangered species, native and invasive species, or erosion of riverbanks.

In both of these examples, we can see how a Pedagogy of Water, including the collection of water stories, and subsequent teachable moments we curate for our students requires teachers to implement a backward design approach to their curriculum (McTighe & Wiggins, 2012). Focusing on the local contexts and making direct connections between students and the community they/we live in requires us to step away from pre-packaged curriculum, which some schools may discourage, but the outcome is worthwhile. Students can see themselves, their community, and their relational ecologies represented and validated in their education, and because of these connections, youth come to understand that they are deeply connected and agentic as both an individual and as a community member.

(RE)STORYING OUR RELATIONSHIPS THROUGH INTERGENERATIONAL EDUCATION

The purpose of the project was to document and honor the firsthand lived experiences of Indigenous relation to the Rio Grande/Rio Bravo as ancestral waters. To do so required that I transform my own role from researcher to co-learner, carefully reconsidering each minute detail of being in-relation as a community member, and listening holistically as a granddaughter/daughter/mother. In this way, the oral histories are not referred to as data, but are instead experiences of collective memory, creative resistance, and demonstrations of emplaced and embodied Indigenous knowledge. Community Elders are living archives. Our stories are healing.

In my own notebooks, I've drawn many iterations of the following model, which depicts the essential considerations in the development of a culturally relevant Indigenous Fronterizx Pedagogy of Water (see Figure 5).

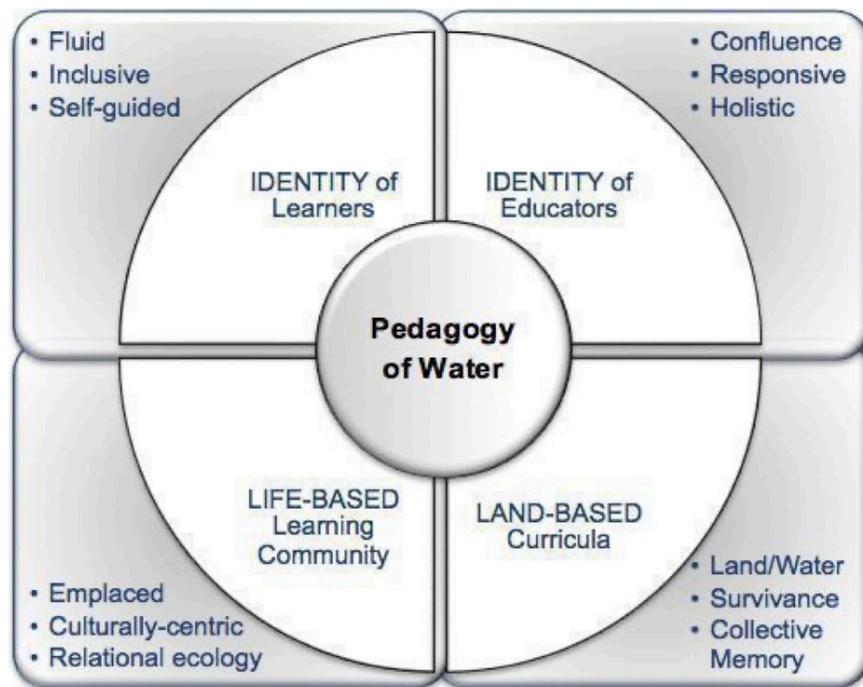


Figure 5. Embodying the Indigenous Fronterizx Pedagogy of Water

The model consists of four interrelated foundational aspects that are essential to the restoring and restorying process: the holistic identity of students, the holistic identity of educators, land/water-based curriculum, and life-based learning communities. The Indigenous Fronterizx Pedagogy of Water models a process of land- and water-based pedagogy that explicitly reorients our relationship to/with water, by embodying the characteristics of water so that we recognize how connected we are to/by/with the waters in the relational ecologies where we live. Similarly, by approaching water relationally, we remember that we are also response-able and responsible to/for the care of water, not as an inanimate substance, but as the most precious life of which we are a part. In this way, education can drive community-led transformation toward a protection of water as life, addressing the global crisis through many simultaneous and diverse local interventions.

The Indigenous Fronterizx Pedagogy of Water demonstrates the ways that the stories of our living archives—our community Elders and knowledge-keepers—can help shape our collective futures in the service of our collective wellbeing. Education reimagined this way moves away from institutional models of youth development intended to control and assimilate young minds, and toward models of purposeful, culturally sustaining freedom dreaming (Love, 2019). To survive as a healthy community, we need creative, socially aware, response-able community members who can draw on their ancestral knowledge to respond to the new contexts that they will encounter.

REFUSING TO FORGET

In this article, I described the process for building the Indigenous Fronterizx Pedagogy of Water from the testimonios of our community Elders. I described the purpose of restorying the river, drawing on the idea of a confluence, as an invitation to keep multiple, simultaneous meanings of the river/border in conversation with each other. I gave shape to the Pedagogy of Water by illustrating the interdependence between the students, educators, land/water-based curriculum, and life-based learning communities as elements essential to the restorying process. I described the characteristics of embodying and inspiriting the Pedagogy as a praxis, so that water is not simply content, but also informs a holistic and culturally centric teaching praxis.

Within one more generation of normalized military occupation and carceral wall structures, our community may not fully remember when our Rio Grande/Rio Bravo held Laredo and Nuevo Laredo together as deeply connected and interdependent sister cities. Future generations may never swim, fish, play, or enjoy the public spaces along the banks of their own ancestral waters because of the normalization of Border Thinking. In response, this project creates an intervention by refusing to forget, restoring and restorying the relationship between the community and Rio Grande/Rio Bravo, so that our youth may understand what our Elders have always known: that water is life. Our Rio Grande/Rio Bravo is our collective lives.

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Building Relationships With Our Island Home: Three Stories from Kindergarten in Hawai‘i

Donna Reid-Hayes

Elder Dr. Walter Soboleff tells us that the seeds of our ancestors are planted within our consciousness. It is this awareness that remains within us and compels us to want to learn more and do more on behalf of our culture and language. It is a longing inherent in us, a legacy of valuing our heritage (The World Forum Foundation Indigenous People’s Action Group, 2020, p. 12).



Figure 1. This child is joyfully immersed in this ‘āina-based learning experience. There is a spiritual connection that emerges with this work.

As early childhood educators, we seek to create authentic and meaningful experiences for the children we learn alongside. We must remember that at its core, “education, in its highest form, liberates human potential through transformational teaching and learning experiences” (Meyer, Maeshiro, & Sumida, 2018, p. 17). As a Native Hawaiian early childhood educator in Hawai‘i, I feel compelled to nurture the children’s emerging sense of place and self to empower them with a strong sense of connection and identity. Although not all the children in my care are Native Hawaiian by blood, they are being raised within a place and a culture that requires each of us to be cognizant of that place and culture. As Meyer (2016) stated, “what will be vital in this century is Culture—a way of being unique to place and people” (p. x). Meyer further clarified that “as a point of history, let it be known that we [Hawaiians] never did privilege” [ideas of race, ethnicity, and blood] as “points of separation” (p. x). There have been efforts to colonize and erase our Hawaiian language and culture for generations (Goodyear-Ka‘ōpua, 2013; Kana‘iaupuni, 2006). My hope as an educator is that each of us—children, educators, and families—will grow to embrace our kuleana, our responsibility and privilege, as people living in this unique and storied place.

MO'OLELO (STORIES) AS AN INDIGENOUS PEDAGOGICAL CHOICE

Kovach (2012) stated, “Stories remind us of who we are and of our belonging. Stories hold within them knowledge while simultaneously signifying relationships” (p. 94). Archibald [Q’um Q’um Xiiem] (2008) used the term “storywork” (p. 3) to describe a powerful pedagogy for use in Indigenous research and in school curricula. In my doctoral work (Reid-Hayes, 2020), I used mo’olelo as research, claiming my own stories as valid data. Weaving together the mo’olelo of my childhood here in Hawai‘i with those of my journey as an early childhood educator offered me opportunities to consider how my emerging sense of my Native Hawaiian identity has shifted my pedagogical and curricular decisions.

Stories are a way in which Indigenous cultures across the world pass knowledge from one generation to the next (Archibald [Q’um Q’um Xiiem], 2008; Kovach, 2012). Acknowledging Goldblatt (2008) and Withrell and Nodding (1991), Gay (2018) stated, “Stories also are powerful means for people to establish bridges across other factors that separate them (such as race, culture, gender, and social class), penetrate barriers to understanding, and create feelings of kindredness” (pp. 2–3). Each listener receives a story from their own perspective and derives their own meaning from its telling. It is with this intentionality that I offer three mo’olelo as glimpses into how pedagogies can shift to embrace the culture, ‘āina (land), protocols, language, and traditions of the place we call home. These mo’olelo come from a Hawaiian perspective, but the same principles can ring true in diverse settings. ‘Ōlelo Hawai‘i (Hawaiian language) is used throughout this paper as a way to honor the place and culture I am working within and to kūpa‘a (stand firm) in its reclamation. It is important to the Hawaiian people that our ‘āina hear her once-banned language spoken aloud.



Figure 2. Child’s vantage point from the hale looking out across the loko i’a at Paepae o He’eia as he listens to the mo’olelo of this place.

CONNECTION TO NATURE AND A SENSE OF PLACE

It is critical in developing a kuleana to Hawai‘i that our keiki bond with the places of their childhood. Kana‘iaupuni (2006) stated, “Hawaiian identity is rooted firmly in ties to the land and sea” (p. 289) and further described the natural world as kūpuna (ancestors) of the Hawaiian people.



Figure 3. Children and kūpuna learning together in this beautiful setting. The experiences of our kūpuna enrich our learning each time we step into these spaces.

As schools develop programs that encourage caring for the land and the ocean, our haumāna deepen their connection to place and embrace their growing understanding of their kuleana (Kana‘iaupuni, 2006). Burgess (2013) highlighted a long-term view as she credited an unknown kūpuna saying, “If you plan for a year—plant kalo. If you plan for ten years—plant koa. But if you plan for 100 years—teach the children Aloha ‘Āina (to love the land)” (p. 30). If we want our children to develop a respect and love for their place and a commitment to its future, we must weave Indigenous ways of knowing and learning into their daily lives. As a central tenet of our kindergarten program, we encourage the children to build a relationship with nature because “[c]hildren must first build relationships with land and territory to become its stewards” (The World Forum Foundation Indigenous People’s Action Group, 2020, p. 5). We hope to build this sense of connection and stewardship as living on an island requires us to deeply understand our interconnectedness with the world around us.



Figure 4. Children slow their bodies, breathe deeply, and observe. We settle in to paint en plein air in order to see more fully; to notice the shapes, lines, colors, and textures of all that surrounds us. We develop a relationship with the ‘āina through all of our senses.

I intentionally focus learning trips on culturally connected natural settings rich with opportunity for wonder and evocative sensory and aesthetic (Greene, 2001) experiences. We hope to engage our haumāna in learning through Hawaiian cultural experiences rather than learning about the culture. I choose literature with a more critical eye, seeking inclusivity and avoiding stereotypes and colonizing attitudes. ‘Ōlelo Hawai‘i has become part of our morning message, our daily schedule, and our routines. Families and our local community play an integral role in our learning environment.



Figure 5. Children, parents, and grandparents experience learning side-by-side, enriching their relationships as they work through challenges.

This paper contains three mo'olelo that come from my lived experiences. My intention is that these mo'olelo will create space for your reflection around your own stories and your pedagogical choices. In these mo'olelo, children are asked to step into work in the lo'i (kalo patch), to mele (sing) to greet the 'āina, and to kilo (observe) and immerse themselves in their surroundings by painting and writing about what they see. These are small moments where Indigenous pedagogies and cultural learning are utilized in our program. They are a beginning, the first pebbles in the pond, creating ripples that move outwards and amplify with each circle they make. When we ask children to immerse themselves in a place, they have the opportunity to develop empathy and respect for their environment (Kana'iaupuni, 2006).

The first mo'olelo, *Jordan: Building Trust*, looks closely at a child as he literally steps, somewhat unwillingly, into an 'āina-based experience and discovers an inner strength and peace in working with his hands deep in the earth. We work to push beyond some initial discomfort and the Western tendency of privileging the individual's choice, and to embrace the work of the group as we build a caring relationship with our 'āina.

MO'OLELO: JORDAN: BUILDING TRUST

Jordan was defiant and reluctant, wanting to push away from the group and yet seeking connection. He was hesitant to step into the mud and water of the lo'i. We coaxed, joked, and encouraged but to no avail. He was adamant, even angry. This was not new to us. We often have children who are reluctant, uncomfortable, or simply opposed to this work. Each year, we find ways in, firmly stating that this is our work for the day.

We gathered at the lo'i, kūpuna sharing their mana'o with us. The children were excited to be us. Tiny bare feet lined the edge of the lo'i, where the grass stepped down into water and mud. The kumu held a kalo plant up.

"This is kalo... taro," she said.

"The leaf looks like a heart!" exclaimed Jason.

"It does. Doesn't it? The stem is called the hā, and this part at the bottom is the kalo. We are going to harvest today, so you are going to need to reach down to the bottom of the kalo and pull up. You aren't going to grab the hā... that is kind of..." she placed her hands around her neck in a sort of strangling motion. "So, we have to reach down." She reached down to demonstrate on a nearby plant. "And pull." She showed them the kalo she pulled from the mud, mud dripping down her forearm. "Then, rinse it off." She shook it gently in the water. "Pull off the roots. Then you can throw it over here," she said as she pointed to the edge of the grass where the two kalo lay in the sun. "Do you think you can do that?" "YES!!!!" the children cried, eager to finally get into the lo'i.

Jordan had begun to inch away from the edge of the lo'i, hoping to escape from this work. My hand wrapped around his, I whispered, "we're staying here... this is our work." But his hand continued to defy me, pushing past my grip, his feet inching away just slightly... but no! I held firm, breathing deeply to keep my resolve from turning into the sourness of anger. We stepped together into the lo'i, as I firmly



Figure 6. Working together offers our keiki shared experiences and moments of deep connection.

grasped his hand, encouraging but unrelenting. He turned to flee, and my arms went around him, strong but embracing. “This is our work today,” I reminded him. He struggled, and then... his body relaxed against mine, his grip loosened, and we began the work of pulling kalo—reaching deep into the mud, dislodging the kalo, pulling off the roots, rinsing the mud, and throwing our harvest onto the grassy bank.



Figure 7. Reaching a hand into the mud, feeling the kalo as he pulls gently.

JORDAN: BUILDING TRUST: REFLECTION

As we make pedagogical and curricular choices, we can look to cultural resources in our areas to help us integrate Indigenous knowledge into our daily work. All learners can benefit from the deep knowledge and expertise of cultural practitioners as they design and guide the interactions at culture-based, ‘āina-based learning sites. From these initial steps, we can gather experiences and stories to help strengthen our growing understanding of the pedagogical shift we are making.

It is vital to place experiences in the children’s paths that will challenge them, encouraging them to develop a healthy respect and aloha for their homeland. This kuleana to our island home, to care for this land, has grown into a strong component of the work I do with

my haumāna today. I am as firm and unrelenting in my commitment to nurturing my students’ sense of Aloha ‘Āina as I am with individual children in the lo‘i. Through a Western lens, we may see Jordan’s resistance as a sensory difference or individual preference, and yet from an Indigenous view, we know that experiencing the textures, smells, and sounds of our ‘āina is key in throwing off colonized attitudes as we reclaim our connection to our ‘āina and our histories. We embrace opportunities to challenge our senses and immerse ourselves in the beauty that surrounds us each day. Experiences in the lo‘i and the loko i‘a, as well as hikes into Mānoa valley and along its ridges, help us all to gather the meaningful experiences we need as we build connections to our place.

Waimānalo–Kaiona, the second mo‘olelo, begins with my own memories that capture moments of spirituality and connection to the ‘āina and to our kūpuna that are so important to our Hawaiian way of knowing and learning.

MO‘OLELO: WAIMĀNALO–KAIONA

It is the time of wana‘au, the sun considering its path for the upcoming day. I sit looking at a painting done in many shades of blue. A teenager stands on the beach, looking out to the rolling waves offshore. The wind blows my hair in my face as I stand there that day. The breeze is warm. The waves roll in the distance. This was a familiar view, the view from Shriners Beach.

Our family knows this place as Waimānalo or Shriners. We came here often to swim, to play, and to picnic. We came for lu‘au and parties in the evenings. We celebrated birthdays here, swam through the concrete block just offshore, and played with trucks and shovels in the sand. We brought cousins, aunts, and



Figure 8. Looking out across the water, there is time to breathe in the salt air, observe the colors of the ocean, and search the surface for the honu who surfaces for a breath.

grandma and grandpa to explore our favorite spots, introducing them to our life. This place was like family, part of the ritual of our lives.

I stand at the side of the road, cars passing by. We carefully help the children off the bus. “Stand by the fence. There are lots of cars.” We wave to parents as they begin to help us unload our supplies.

“Here we are!”

“Hello!”

“Aloha!”

We lead the children safely away from the road and down to the edge of the beach. It’s a beautiful day, the turquoise of the water is striking, and the unblemished sand stretches out along the shoreline. There is a community here. It shows in the mown lawn that is green and lush. There are kūpuna at the fence, smiling as they welcome the children. They are curious to see what we are going to do.

“Aloha. So sorry to...” our voices trail off with concerns of intrusion left unsaid.

“No worries,” they say, interrupting our apology. They reassure us that we are welcome. “What are you all going to do today?”

“We are going to paint. To look closely at this place. The children are learning a hula telling about Kaiona, so we wanted them to know the place they are dancing about.”

We gather there on the grass and collect ourselves. We mele to greet the space. We express gratitude for the learning we hope for. Then we get ourselves ready to start putting together our project for the day. I look out at the water, a bit teary, breathing in the beauty of this place. My mother’s ashes were scattered here, in the waters just offshore, where children were splashing and laughing.

We had carried her ashes out into the shallow water with lei swaying on our arms. We pushed blossoms from the thread. Purple orchids floated out around us. We shared thoughts of a devoted grandmother, a strong mother, a wife who was adored by her husband, and a graceful hula dancer. We prayed for her and said goodbye... aloha. We scattered her ashes as the water lapped at the shore. The air was still, no wind to stir us. The gray clouds of ash sifted slowly to the sand beneath our feet, moving with the rhythm of the waves. As we made our way out of the water, we looked back to see a honu raise his head at the center of the ashes. He was there to greet her. She was home at last!

We begin to fill palettes with turquoise, yellow, and magenta to offer the children bright colors to match the day. Children and families begin to settle, some on the grass, some under trees, and others out on the sand.

The horizon is clear; the many shades of blue, deepening the further out the eye travels. Gentle waves lap the shore. Children stop from time to time to run through the shallow water. Someone calls out “honu!” And we are reminded of the mo’olelo of the ali’i and the honu of this place generations ago, as the children work to tell the story of this place with their paints.



Figure 9. Painting en plein air offers time to ponder and be enveloped by a place.

As the canvases are lined up along the fence, we collect dirty brushes and supplies. There is a feeling of satisfaction as the paintings catch our eyes—an array of colors, mixed carefully by artists, both children and adults. Each image tells the story of this place from the particular perspective of the painter. We walk down the beach and dance hula. The children had learned a song about Kaiona. We honor that place with our hula and our voices.

There is a new painting now that sits facing me as I write. Its colors are vibrant and varied, reflecting the bright palette of the day. There are mothers under the tree with their children. I see myself standing at the water's edge with a child at my side. I can see my nana running on the beach as a toddler, sun-kissed and joyful. I see my mother looking out at the horizon, dark glasses shielding her eyes, splashing in the shallow water with my babies. I see myself as a teacher walking with a child. We explore Kaiona, eager to share the story of our day. I see myself in another painting, shades of blue, a teenager on that beach, looking out on the horizon. I am looking out towards a future I could not anticipate, with no idea of whom I would become, or the lei I would weave. I wonder to myself; how will my children embrace this transformation and acknowledge what they hold within them?

WAIMĀNALO-KAIONA: REFLECTION

We often use the picture book *Step Gently Out* (Frost & Lieder, 2012) to set the tone for our adventures into nature. If we can step gently, enter peacefully, what will we notice? What will we hear? We have used art and observation as a means of building a relationship with a place. We offer our haumāna experiences to slow down and embrace a place, to share its rhythms and feel its presence. We invite children to draw, paint, write poetry, listen to mo'olelo, or dance as a way of getting to know their surroundings in a more enduring way. We ask families to take on the role of learner rather than observer or even critic. Adults tend to hesitate at first, shying away from the vulnerability required for new learning, but with encouragement they eventually put down their phones and settle into the work as well. This shift in the structure of our learning trips has brought deeper connections for all learners, developing lasting memories and building strong desires to return to this relationship over time. The children and families have become more comfortable with challenges and more present in their interactions with a place and with each other. Our relationships shift closer as our shared experiences grow.



Figure 10. Parent and child sharing a common palette while telling the story of this place from their unique kuana'ike (perspectives).

The third mo'olelo, *Paepae o He'eia*, evokes a time when my growing understanding of this pedagogical transformation was reflected back to me by a parent. In this mo'olelo, I begin to recognize the impact our work can have on our relationship with families and their learning when we include them in our experiences.

MO'OLELO: PAEPAE O HE'EIA

Never have I considered that I am teaching Hawaiian language, and yet today, my haumāna use 'ōlelo throughout their day. They have begun to hear the sounds, taste the words, feel the vowels forming in their mouths. They introduce themselves, starting to understand the importance of carrying their family name to honor their 'ohana. They hear songs, find familiar words, pick out what they know. They notice words around them, asking, "How do you say...?" My answer is often, "I don't know. I'll go find out."

They listen and try to pronounce. Their ears are familiar with the sounds. They notice the ‘okina in the name of a friend. They are aware that this language, the language of their home, exists for them. They use many words as first words for things, knowing their meaning rather than their translation. Words and phrases like mākāhā (sluice gate), i‘a (fish), mahalo (thank you), heluhelu (read), e ke akua (Dear God), noho ilalo (sit down), kū iluna (stand up), e pā‘ani kākou (let’s all play), mele (song), piko (center), and oli (chant). Some of these words are now familiar, old friends, comfortable on the tongue. When a word is not part of the everyday mo‘oki‘ina (routine), the children may not always remember it, but they have already stepped over the threshold of ʻōlelo Hawai‘i, never to feel left outside. They know they can enter, that they are welcomed into this space and this learning. They know they have a place in this work. There are children like me, blond, blue-eyed Hawaiians. No one would guess that they too are Hawaiian, proud of their heritage, eager to embrace any learning about it that comes their way. Parents express appreciation for their child’s new perspectives, ideas, and understandings.

We tumble off the bus; the air is charged with the energy of eager 5- and 6-year-olds. We are heading to Paepae o He‘eia. The children recognize the loko i‘a from books in our classroom as we head down the long driveway. We gather together as a group.

“Aloha!”

“Aloha!”

They are greeted with hugs. The kumu stands before us; the children stand, shuffle, then stop... stillness, calm takes over. Parents notice and remove their hats. The sun is in our eyes as we lift them to scan the horizon.

“Eia no mākou... pā!” offer two small voices with a strength we are proud to hear. The mele is pure and strong:

Eia no mākou
Nā keiki o ka Punahou
Ho‘omālamalama e mōhala ai
‘Umeke ka‘eo
Loko maika‘i
Mahalo i nā kumu alaka‘i
Mahalo i nā kumu alaka‘i¹

The keiki ask permission to enter, to seek new knowledge and new understandings. They express gratitude to their kumu, who is there to help them learn. The kumu responds strong and proud. As he finishes, he commends the children for their mele and their strength, and the huaka‘i begins.

1 E. McGuire, lyrics provided in personal communication, 2010. “Here we are. The children of Punahou. Seeking enlightenment. So that we may blossom. Have well-filled minds. And be people of good character. Giving thanks to the teachers who lead up. Giving thanks to the teachers who lead us.”



Figure 11. As we walk the wall of the fishpond, we walk in the footsteps of our kūpuna.

We walk along the walls of the pond. The children marvel at the stories of how it was built long ago and rebuilt over the last decade. They think back to the stories read at school and how the people hali hali the stones, from hand to hand, from the mountains all the way down to the shore to form the walls. This is how they learn the idea of “ho’omau ka hana a pau” ((Armitage & Hale, 2001, pp. 20–23), the concept of ahupua’a becoming real for them in this collaborative act. The makahā fascinates them, and they try to imagine the fish entering the loko i’a in pursuit of food rather than being caught and trapped. The intelligence of our kūpuna illuminates the faces of the parents as they learn alongside their keiki.

The children are particularly excited to climb into the hale (house) at the outer edge of the pond. They sit entranced by the mo’olelo of this place. They hear mo’olelo of siblings who neglected their relationships and learn the consequences this can have. They are captured by the language, the rhythm of this place, and the generosity of their kumu. He is captured by their interest and their eagerness to understand and connect. Ideas of sustainability, community, and relationship are illustrated again and again with each story the kumu shares.

Another trip, taken years ago, lingers in my memory:

“We are going to have you all do some work here at the fishpond. This big pile of coral needs to get loaded into these buckets,” directed the kumu during that trip. “Can you guys help us with that?” “Yes!” shouted the children. They scrambled towards baskets of gloves and began to stretch their fingers into the tangled fabric. Each child has their own way of putting the gloves on. Some were careful, placing each finger in cautiously. Others pushed hard against the stiff, salt-soaked fabric and needed help to slow down and insert their fingers into the right spaces.

The children returned eagerly to the pile of coral to gather handfuls or armloads, as much as they could manage. Thud... clunk... the pieces of coral crunched together as they landed on rocks previously dropped in the bucket.

The work was done. All were satisfied with a task completed. But as we returned to school, we saw that the purpose of the work had been missed, not fully understood by the children. Why had we been putting coral in the buckets? What did that mean? So, the work began, back at school, to help them understand their place in that task.

We began by reading from *Nā ʻōlelo noʻeau no nā keiki: Words of wisdom for children* (Armitage & Hale, 2001). The children learned the ʻōlelo noʻeau (wise words from our ancestors), “E hoʻomau ka hana a pau (when you start something see it through until completed until the very end)” (Armitage & Hale, 2001, pp. 20–23). There was an illustration of people passing stones, hand to hand, in order to build the walls of the fishpond. We read, we talked, and then we gathered stones from our ʻauwai to build our own fishpond walls and, with them, our own understanding.

Now, they understood! We had loaded the buckets so the grown-ups could take the rocks out to fill the holes in the wall of the fishpond... to repair that ancient site, to make it whole again. We had been part of that work.

That memory strengthens as I stand in the present, walking along the wall that continues past where those holes used to be. Those children years ago were a part of that rebuilding, of that hali hali, the passing of stones from hand to hand, that collaborative act. We gather to end our time with the kumu. The children face the loko iʻa to express gratitude to this place, to the kūpuna, and to this kumu. A Kilihune hula is their mahalo. They are learning that their voice, their breath, and their hula are gifts they carry with them always. Again, the kumu is moved by their learning, their understanding that is growing.

As we climb the hill pushing slowly upwards, one of the moms places her hand on my shoulder.

“I want to thank you for this trip.”

“It was wonderful, wasn’t it?” I respond.

“Thank you for creating a protocol for them,” she adds.

“I’m trying,” I say, “I’m learning more each day.”

“As a people, we are learning... we are figuring out how to do this,” she says quietly, affirming my efforts and my place in this work. Tears blur my walk to the bus. Each trip to this place has been more than we had imagined, more than we had planned for.

The feeling inside me as we drove out—the Koʻolau Mountains watching our progress—was warmth and gratitude. It’s coming; it’s strengthening. What I am trying to create, the kahua or foundation I am seeking to build, is starting to take shape. The seeds that have been planted are beginning to sprout, and the new stems are stretching towards the light. There is hope that this work will flourish and bloom.

PAEPAE O HEʻEIA: REFLECTION

At first, the idea of integrating language and culture into my classroom seemed out of reach, maybe even inappropriate for someone who was clearly not an expert in cultural knowledge, and yet I felt I had no choice. As a Native Hawaiian educator, it was my kuleana to enrich my understanding and offer culture-rich opportunities to the children and their families. As my culture-based research and learning progressed, I found that I would need to include language, traditional song and dance, moʻolelo, and cultural protocols to create a culture-rich environment for the children (Reid-Hayes, 2016). The mother in the moʻolelo reminded me that as a people, we are learning how to reclaim and restore our right to

our culture. It is within the grasp of each of us to make these shifts. It takes intentional action to move in new directions that can feel daunting, and yet it is a transformation that is not only achievable but empowering.

I discovered the power of family engagement within this context. Including family members in this work encourages a broadening of their understanding of kuleana and of their relationship with their child as a learner. If I can open spaces for families to engage, inspiring inquiry and interest, then I will have made an impact beyond the single school year I have with their children. Each step we take toward embracing the cultures around us enriches our programs and our own lives in the process. I have found that it is in these pedagogical shifts that I have been able to turn my practice towards new insights and goals.

AS OUR STORIES COME TOGETHER

As early childhood educators, we can intentionally push our work into new areas, integrating culture-based experiences, developing protocols, incorporating native languages, and aligning our practice with culturally responsive practices (Hammond, 2015). We can transform our practice by utilizing Indigenous pedagogies and curricular designs to more intentionally meet the needs of our diverse community of learners.



Figure 12. After harvesting kalo, the children experience the lo'i through the eyes of an artist capturing this moment in time on their canvases.



Figure 13. Immersive 'āina-based experiences deepen our connection to the natural world and offer us a new perspective for learning.

'Āina-based learning trips offer opportunities to engage with cultural practitioners and build relationships with the land, the sea, and the natural world of our home. Building protocols around how to enter a space, greet a teacher, or express gratitude encourages deeper cultural learning, incorporating traditions, behaviors, attitudes, and language into our daily lives. Inviting families into this learning broadens the scope of our impact as “the intelligence of our kūpuna illuminates the faces of the parents as they learn alongside their keiki” (see Mo'olelo: Paepae o He'ēia). Integrating 'ōlelo no'eau grounds our work in the wisdom of those who came before us. Each step forward offers new growth and new opportunities for learning.

My work as an early childhood educator exists at the beginning of a long and winding journey. I can plant seeds with my haumāna, their families, and my colleagues in the hope that we will create a better foundational experience. As Palmer (2017) stated, “Intellect works in concert with feeling, so if

I hope to open my students' minds, I must open their emotions as well" (p. 66). Beauty creates a desire within us to replicate and recreate (Scarry, 1999). If we invite children and their families into beautiful, meaningful experiences with the 'āina and the culture, we may inspire interest in future learning. Perhaps we will increase the expectations of the children and families and a thirst for more culture-rich experiences as they grow and learn together. It is in this new learning that each of us grows.



Figure 14. Opportunities to work alongside our kūpuna connect us to generational knowledge well beyond the tangible experience.

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The Significance of Land Acknowledgements as a Commentary on Indigenous Pedagogies

Linda Tuhiwai Smith

In my decades of navigating both the academic institutional world and the world of Indigenous peoples, the emergence of land acknowledgements in academic institutions and in public and government contexts is a fascinating story of how one small element of Indigenous pedagogies has come to be expressed in institutions that have historically reviled Indigenous peoples. Land acknowledgements are often made as statements at important events within institutions. The land acknowledgement can be a “Welcome to Country” greeting by an elder, often given in Australia, or a formalized statement that is read out by a non-Indigenous official at an occasion such as a graduation ceremony. Indigenous pedagogies encompass the worldviews, philosophies, cultures, histories, ways of knowing and being, and practices of diverse Indigenous peoples. Every Indigenous nation and peoples will have their own way of defining, naming, and even thinking about the idea of an Indigenous pedagogy. In my own Māori culture from Aotearoa New Zealand, for example, we have no one word that exactly translates to pedagogy. We do have a word, *ako*, that means both teaching and learning, and it is from this one word that we get a glimpse into a worldview about the relational nature of knowledge transmission, teaching and learning, teacher and learner. Our pedagogical ideas and practices are deeply connected to our understandings of who we are, where we have been and may come from, why we exist, and what our responsibilities are while we are alive and then beyond our physical lives. It is with that deeper sense of an Indigenous pedagogy that I want to reflect upon the significance of what may seem like the simple act of a land acknowledgement.

It is of course easy to critique the land acknowledgement expressed in institutional settings as a tokenistic and meaningless gesture, an awkward and embarrassing display of institutional arrogance, a show of neoliberal performativity, and a cynical act of cultural appropriation. Yes, I have personally witnessed numerous epic failures to deliver a respectful land acknowledgement, many condescending attempts at land acknowledgement alongside dreadful and demeaning mispronunciation of Indigenous language. Along with my colleagues, I have felt outraged, offended, embarrassed, ashamed, implicated, and bemused. However, I have also witnessed acknowledgements that have brought me to tears, raised me up, exposed me to a different experience, expanded my knowledge, and filled me with hope.

My questions for this commentary, however, are not about institutions and why they make such spectacular mistakes and yet still expect to be praised, but rather about why land acknowledgements matter from an Indigenous perspective, why Indigenous communities have sought such an acknowledgement, often over decades, and what land acknowledgements can open up in terms of engaging in a broader, more transformative set of Indigenous pedagogical practices. I will answer those questions by drawing from my own Māori knowledge and understandings with an absolute recognition that other Indigenous nations will have their own knowledge and understandings about land acknowledgement.

I generally begin most of my talks with an acknowledgement of one or all of the mountains from my own tribal areas. We share with many other Indigenous cultures the idea that the earth is our ancestral mother. The land and all its features, such as mountains and rivers, are important. The land came into existence before humans. The land is a being. It is alive. It gives us life. It gives us identity. It shapes our practices. The mountains dominate the landscape of Aotearoa and so every *iwi*, or nation group, can

point to one or more of the mountains as their mountain. Many of our mountains are volcanoes, some still very active. Others have been pushed up out of the earth. Mountains, for us, are gendered and have their own stories, love affairs, battles, and journeys. There are proverbs, stories, and songs about our mountains that have been passed down from generation to generation. My own iwi or tribal and family lands lie at the foot of the mountains. When I see these mountains I know I am in the home of my ancestors.

Acknowledging the land and our mountains is the first phrase of what we call a pepeha, the protocol of introducing oneself. For Māori, acknowledging the land is one of the most important and respectful ways to greet others and is far more important than announcing one's individual name as an opening greeting. Your name is not as important as the name of your lands, mountains, waterways, and iwi. Where we are from, who we are from, comes first in any introduction. The pepeha is reserved for introducing yourself to people who are not from your own family or nation and in contexts where you are a visitor on someone else's land.

Acknowledging the land we are standing on or speaking from is also a way to identify by name the nation whose territories are within this land. Nations are the guardians of the land and exercise governance over their territories, and it is important that visitors know which nation's land they have come to so they can exercise the right protocols or forms of respect. In my culture, the public acknowledgement of land and exchange of introductions can be extremely formal and filled with ceremonial significance or, when strangers meet, very simple and ordinary. It is considered very important that it happens at the beginning of an event, arrival, or encounter and that visitors or strangers enter and participate in a respectful manner.

Acknowledging the land is also a way of revealing important connections and alliances across nation groups. Our nations share connections to waka, or our ancient voyaging canoes, that journeyed across the Pacific. One ancestral waka is shared by several nations, as the descendants of those early voyagers settled the lands and formed different groups over generations. The land and water also connect us to other Indigenous peoples. Our ancestors navigated the Pacific, and we see ourselves as related to other Pacific peoples. The land and the ocean are connectors for humans. It is humans who exercise jurisdiction over land.

Finally, the land itself is a witness to what occurs on it. When we acknowledge the land, we understand that the land can hear us and see us practicing our pedagogies in respectful ways that honor Mother Earth and ourselves. The land has witnessed the comings and goings of all that has occurred on Earth, including all human endeavours. We regard some lands as tapu, as set aside from ordinary activities. We have many ceremonies that recognize the sacredness of some land, that apply or remove sanctions on land, and that assert mana over land. Some of our land has been traumatized, just as our people have been.

From within my Indigenous context and culture, the land acknowledgement is the beginning or the continuation of a relationship. It begins the task of making the connection between people and places by laying out some epistemic protocols and symbols that form the basis of a relationship. It is the relationship that becomes the vehicle of change. If there is no relationship, then Indigenous communities cannot engage. Furthermore, the land acknowledgement conveys significant information that helps visitors to position themselves in terms of identifying how they might connect to this place, this land that is being acknowledged. It does not exclude their own lands of origin but is an invitation to bring visitors into a space where their land can also be greeted and acknowledged. That happens when people respond to the land acknowledgement with their pepeha.

There are a number of decolonizing elements that are also part of the land acknowledgement, especially in academic institutions that are so deeply implicated in the colonization of Indigenous peoples. Academic institutions represent political, economic, social, environmental, and cultural exploitation and expropriation of Indigenous peoples. Expressing a land acknowledgement is a potent recognition of the intellectual, material, moral, and symbolic presence of these institutions on lands once occupied by Indigenous peoples. It is, in a decolonizing framework, a necessary reorientation to place, to the lands these institutions stand on, and to the colonial history written and witnessed in the land. It has taken hundreds of years in some places for those acknowledgements, which take less than five minutes to express, to occur. The very fact that it has taken so long for academic institutions to give a land acknowledgement indicates how symbolically significant it is for them to say it.

The land acknowledgement signals what ought to be a healing, restorative, and reconciliatory process that engages in institutional transformation that influences all aspects of knowledge, teaching, and research. Can words heal? Of course they can, but not on their own. Actions and change must be wrapped around the acknowledgement. The land acknowledgement is about being seen, recognized, and honored. Remember that for us, it's merely the first utterance, the beginning of the telling of a story, the beginning of a process, the signal of intent. To do anything less is to knowingly perpetuate colonialism.

When applied in an institutional context, the land acknowledgement is often expressed as a statement, a declaration of intent, high on symbolism and effort. It is, and ought to be, intentional. As institutions begin a journey of Indigenous recognition, the land acknowledgement may seem like a small first step, a sign of something greater to come. Gaining support to express land acknowledgements in official contexts can come about through the hard-fought struggle—taking enormous effort of a generally minority group of Indigenous scholars, students, allies, and communities. The land acknowledgement carries the weight of expectations that most institutional practices that are taken for granted are never measured by, such as whether a practice is inclusive of every group and individual in society, or crosses the line between religion and secular education, or is delivered by someone of a specific gender. The land witnesses those anxieties. The land is the home of all human beings. Acknowledging the land is the most simple and yet most profound act of humility and respect that humans can offer. We need institutions to engage in that genuine act of humility and respect. Perhaps then, relationships can form and changes can occur more rapidly.

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“It Feels Fake:” Decolonizing Curriculum and Pedagogy in Predominantly White Institutions

Hollie Anderson Kulago, Paul J. Guernsey, and Wayne Wapeemukwa

Many Indigenous and Indigenous-allied scholars recognize the importance of building and maintaining relationships with Indigenous peoples, families, and communities in their educational environs. We are scholars who, at the time of this study, lived and worked in Pennsylvania, where there are no Indigenous nations with federal or state recognized status. This is the case even though Indigenous peoples, including Haudenosaunee and Lenape, live on their original territories, and there are many other Indigenous peoples in public schools, on university campuses, and in community spaces, such as American Indian centers. In places where Indigenous nations hold state or federal recognition, partnerships with educational institutions have become routes that Indigenous nations use to advocate for their students, goals, and knowledges. Without that status, Indigenous peoples, families, communities, educators, and allies seek alternative routes.

There are few Indigenous communities near our campuses of Pennsylvania State University and Lafayette College (Easton, Pennsylvania). As Paul Guernsey describes in detail below, this is no accident. We acknowledge the colonial histories (and ongoing realities) of removal, dispossession, and genocide that led to this erasure. Many of the Indigenous peoples on whose lands the universities are situated thrive elsewhere as nations or within smaller pockets of community on traditional homelands. This context leads us to ask: How do we build relationships to this land if the political continuations or tribal nations of the Indigenous peoples of the area are not easily accessible here?

Our initial attempt to deliver Indigenous and decolonizing curricula in a Pennsylvania-based land-grant university and a private liberal arts college resulted in a general feeling of “fakeness.” No matter how hard we tried, remaining accountable to Indigenous peoples seemed an impossible task given the larger, institutional structures and historical contexts that we operated in. We had a new task: *How can we deliver Indigenous and decolonizing curricula without it “feeling fake?”* We believe that this question resonates with the questions posed by this special issue, including: *“How do communal needs and theories of social change shape pedagogical approaches? How do sovereignty, decolonization, resurgence, and/or Indigenous well-being approaches manifest different pedagogical approaches?”* Our article provides one way of answering these important questions. By sharing our conversations, experiences, and stories, we invite you, the reader, into a relationship with us as you consider your own journey with Indigenous and decolonizing pedagogy. Together, we will come to a deeper understanding of decolonizing curricula.

INDIGENOUS EPISTEMOLOGIES AND DECOLONIZING PEDAGOGY

The theoretical framework for this paper engages Indigenous epistemologies and decolonizing pedagogy. Broadly speaking, Indigenous epistemologies emphasize wholeness (physical, emotional, spiritual, and intellectual), interconnectedness to land (in all its forms and entities), and relationship with others (family, communities, and nations). Knowledge, in this holistic framework, tends to be both subjectively determined *and* collectively accountable (Kulago, et al., 2021). Indigenous scholars see knowledge as fundamentally relational and community as the primary setting for Indigenous education (Wilson, 2008; Cajate, 2015). In a sentence: “Indigenous education is rooted in wholeness and survival of the individual and community” (Kulago & Jaime, 2022, p. 9). This might be referred to as what Kovach (cited in Windchief & San Pedro, 2019) calls “self-in-relation,” because it “frames knowledge as a co-production located in the development of ourselves in relation to others” (p. xvii).

As we worked to decolonize our praxis, we grounded ourselves in Indigenous ways of knowing and decolonizing insights to realize the value of relational and collective thinking in our curriculum and pedagogy. Because we felt accountable to Indigenous students, families, communities, knowledges, and sovereignties, our stories focused on the ways that western educational institutions, simply by being who they were, worked against these goals and towards the erasure of Indigenous presence. Western schooling has been an essential conduit of settler-colonialism, a conduit that continues to support the dispossession of Indigenous peoples from their/our lands with “civilizing agendas” that replace communality with individuality. This overwriting of relationships “enable[s] a deconstruction of collective understandings that informed and maintained tribal resistance to land confiscations” (Pihama & Lee-Morgan, 2019, p. 2). In sum, settler colonialism corrodes Indigenous knowledge systems by disrupting relationships to land, resulting in “a profound epistemic, ontological, cosmological violence” (Tuck & Yang, 2012, p. 5). Collectivity is key to disrupting goals of western educational institutions.

Our task, as Indigenous and Indigenous-allied educators, is to re-establish the connections and relationships that western schooling has historically severed. As we see it, “the purpose of decolonial curricula is to rupture the epistemic barriers of western hegemonic knowledge” (Todd & Roberts, 2018, p. 69) and re-establish connections with the Indigenous communities to the lands where we work and with the lands *themselves*. The land cannot be a mere venue or space upon which we live and work; it must also be involved in the education process as an actor and subject (not an object) in decolonization. We see value in protecting room for “epistemological collisions” (Kerr, 2014, p. 92) between western and decolonizing pedagogical frameworks. Such collisions “occur in Western educational institutions when the mechanistic assumptions of modernist ontologies are challenged by Indigenous perspectives based in contrasting ontologies” (Kerr, 2014, p. 92). These collisions then become sites for critical pedagogy. We believe that such curricula must do more than merely educate; they must also repair the Cartesian split at the very foundation of western “rationality.” Such healing informs the way we come to know and do education in our various worlds and, we claim, can only take place if pedagogues adopt an alternative epistemology.

Our article branches into three sections or “stories”—one for each author—to illustrate three different experiences that all deliver Indigenous and decolonizing curriculum. Colonialism creates distance and disconnection at different scales. Each story highlights how the authors struggled to find healing at different levels of community, land, and self. The first story speaks to the challenge educators face when remaining accountable to Indigenous peoples. The second speaks to institutional blockages that western educational institutions erect between non-Indigenous allies and diasporic Indigenous communities. The third speaks to how western schooling alienates Indigenous educators from their ancestors and how this “ancestral alienation” affects curriculum delivery.

We have organized our findings according to what Stó:lō scholar Jo-Ann Archibald (2008) calls “storywork,” to bring you into relationship with us. We engaged in storywork because it “educates and heals the heart, mind, body, and spirit, weaving new synergies of transformational change through deep interrelational understandings of story, people, and place” (Archibald, Lee-Morgan, & De Santolo, 2019, p. 8). Storywork, moreover, provided us the space to continuously reconnect with each other and stay aligned with our goals to support Indigenous students, families, communities, and ways of being.

We began practicing storywork at the conclusion of our first writing project. We met once a month to share stories with each other and to work through the challenges that we faced while attempting to remain true to our decolonizing pedagogy. Through our sharing, we also grounded ourselves in our decolonizing curriculum and pedagogy. We took heed of Archibald’s (2008) principles of respect, responsibility, and reverence as living, breathing values that allowed us to critique ourselves and one

another. This relaxed and open atmosphere, however, did not mean that we let each other “off the hook.” Rather, it challenged us in new ways that we were not used to, especially given our experience in western schools. Based on our various positionalities, we looked at each other’s experiences with different lenses in a receptive, robust, and holistic learning context. Through relational dialogue, we found that our efforts to deliver decolonizing curricula were frustrated by many shared structural conditions of western institutions, including 1) the uncertainty and geographical randomness of labor markets that creates social isolation and distances Indigenous educators from their homelands, 2) tenure and merit-based pay systems that do not acknowledge the emotional labor or community-building inherent to Indigenous epistemologies, 3) grant funding criteria that center educational institutional needs over Indigenous nations, and 4) a labor ethic of competition and overachievement that demands self-exploitation and pushing oneself to the point of exhaustion, burnout, and physical/mental illness. We found that storywork, far from being purely subjective, myopic, or relativistic, is an Indigenous form of structural critique—a point we return to in the conclusion. After elaborating on each of our stories, we conclude with some concrete recommendations and takeaways that other, like-minded educators may implement in their praxis.

SHARING STORIES AND INFORMING OUR PRACTICE

Engaging Relationships and Being Responsible

I am Hollie Anderson Kulago, a Diné woman working in a predominantly White institution 2,000 miles away from my homeland. My work is dedicated to and driven by supporting Indigenous students, families, self-determination, and sovereignty. I created a decolonizing and Indigenous curriculum and pedagogies course that focused on creating curriculum and theorizing instruction through critical Indigenous pedagogy frameworks that include truthful histories, centering Indigenous knowledges, and supporting Indigenous futurity, nation-building, and sovereignty. However, as I considered what it meant to teach these “topics,” I felt that there needed to be more action in the way of relationship-building with the land and the Indigenous community. Like almost all others at this educational institution, I am a visitor to these lands. To me, creating and teaching this class without local Indigenous input felt fake. There are very few Indigenous communities in central Pennsylvania, so as I contemplated my work, I wondered how to make what I teach real. Throughout my years in the region, I have established relationships with various Indigenous students, families, and communities outside of Pennsylvania, so I began to engage these relationships in ways that could not only help my curricula but also support Indigenous communities’ goals for their students. State borders should not determine the original territories of these nations.

To form these relationships, I organized time to work with people from Haudenosaunee communities to discuss our parallel needs for curricula that would support the educational goals for their youth and for my course. I traveled to meet with community educators, teachers, and leaders on their lands to discuss the work we do and how it could help support their youth. During my time with the Haudenosaunee group, I heard stories from their ways of knowing that brought context to the goals for my course. I heard stories that attached my current location to significant places within their creation stories. They shared their ideas of how western educational institutions could support their educational needs. These beneficial discussions started a flurry of events that ultimately led to me organizing visits and introducing a delegation of Haudenosaunee representatives to representatives of my educational institution. A more formal relationship between the institution and Haudenosaunee community has been initiated.

Once these relationships were engaged, I felt an overwhelming sense of responsibility to honor them. On the one hand, it might seem as though I had created more work for myself. My new collaborators now had expectations of me to be an organizer, liaison, and a direct influential line to how the

educational institution makes moves to support the needs of the Haudenosaunee, Indigenous peoples, and humanity in general. However, feeling this overwhelming sense of responsibility took what I was teaching in my course to a level that did not feel fake; it could not be faked. It got real all of a sudden! It asked different actions of me, different from merely sitting in my office, writing a syllabus referencing Indigenous and critical scholars in a weekly schedule linked to assignments that could be graded. The sense of responsibility asked me to act. Along with the overwhelming sense of accountability to the Haudenosaunee community, I experienced an overwhelming and reciprocal sense of support from them. As the only Indigenous faculty member in my college, I have felt isolated, even though I have extraordinarily supportive colleagues. The support that comes from the Indigenous community feels different and reminds me of the care I need as an Indigenous person to be in a community and reminds me of why I do this work. The requirements of western institutions sometimes take me in different directions. The next time I teach my course, it will reflect my responsibility to and support from the Haudenosaunee delegation and their communities.

Staying Accountable to Indigenous Nations in Academic Contexts

My name is Paul Guernsey. I am a settler, Euro-American, and I grew up on Ohlone lands in what is called California by some. In the fall of 2021, I began as a Visiting Assistant Professor of Environmental Studies at an elite liberal arts college located in Lenapehoking, the traditional homelands of the Lenni Lenape. These lands were stolen in 1737 by the sons of William Penn by way of the “Walking Purchase.” Even Pennsylvania courts have recognized that this “purchase” was a blatant fraud. In a 2004 court case in which Lenape people sought to reacquire a portion of their homeland, the US District Court for Eastern Pennsylvania found that the legal basis of settler title was not the transaction but the doctrine of discovery, according to which, “Aboriginal title could be extinguished by the sovereign at will” (Delaware Nation v. Commonwealth of Pennsylvania, 2004). It is therefore not any purchase, agreement, or mutual understanding that secures this land for settlers, but the principles of white supremacy enshrined in US law that assume that the “superior genius of Europe” grants the right to extinguishment (*Johnson & Graham’s Lessee v. M’Intosh, 1823*).

It was on this land and in this context that a student approached me in the fall of 2021 asking questions about the college’s Climate Action Plan, or CAP. The CAP proposed to reforest a 100-acre field that was currently under monocrop corn production as a way for the college to offset its carbon emissions. The student asked what good it would do to replant trees on stolen Indigenous lands just so that the college could call itself carbon-neutral. We agreed, it felt fake. The default parameters of western environmental education placed a premium on land as a resource for “sustainable” development, perpetuating the attack on Indigenous collectivity and continuance. So, we asked ourselves: How could our work become accountable to Indigenous students, homelands, and nations in its plans for sustainability and carbon neutrality?

In the spring of 2022, I ran a course titled “Decolonizing Methodologies for Environmental Studies.” We began by engaging with the histories, treaties, and acts of dispossession that eliminated Indigenous presence on the land, and we discussed what sorts of actions we could take to honor Indigenous homelands and nations. Our first thought was that as a settler institution, we should not unilaterally create a land acknowledgment that was not conceived in collaboration with Lenape peoples and backed up by substantial institutional changes (Stewart-Ambo & Yang, 2021). Likewise, we could not engage in “place-based” education to get to know the land without building relationships with Lenape nations (Calderon, 2014; Kulago et al., 2021). With the closest political continuations of the Lenni Lenape in Oklahoma, some 1,500 miles away, our work was cut out for us. Indeed, the wounds and rifts created by colonialism are spiritual, cultural, political, and geographical in nature. Healing them is no easy task.

To support our efforts, I applied for a teaching grant to form a collaboration with the restoration ecology

class that was working on the reforestation plans. I wrote activities into the grant that I thought would appeal to the college, such as field trips and a Lenape scholar guest speaker. Much to my satisfaction, the grant was enthusiastically approved. However, almost by divine intervention, my little ego boost was quickly put in check the very next day. I had been asked by the Indigenous peoples Student Association at Penn State to organize a panel during Native American Heritage Month on allyship with Indigenous people. We were sharing stories about successes and failures. Hollie Kulago was talking about how she was working to “support the work that Indigenous nations are already doing” in her collaboration with folks at the Mohawk Nation in Akwesasne. Somewhere in me, a switch flipped, and I said to myself, “You wrote the grant backwards. You centered the needs, traditions, and interests of the college rather than supporting the work that Lenape people are already doing.” With yet another “it feels fake” moment, I realized how important it was to talk through our work in community and remind each other of basic principles so that we do not become “disconnected” from what we have learned and unlearned (Archibald, 2008). I realized that the incessant tendency of western institutions to recenter themselves in our teaching and research can only be resisted when we share our work and stories with others and hold each other accountable.

My misformulation of the grant revealed a deeper struggle with how to prioritize Indigenous sovereignty in educational institutions. In particular, the fact that I applied for the grant in isolation, rather than in community, was symptomatic of the values of expediency and professional advancement in academia, which tend to encourage individual actions rather than communal ones. Building and maintaining reparative relationships with ourselves, our students, and Indigenous nations often demands working in spite of, rather than in and through, the colonial institutions we serve.

It was not until after the grant was approved that I got in touch with people working for the Delaware Nation in Anadarko, Oklahoma. We developed fruitful synergies and brainstormed ways we might support work the nation was already doing. We talked about summer programs to bring youth back to the homeland and giving back land in the restoration area for ceremony. Some of our ideas ran counter to the material interests of the college to maintain control over the land. As part of our coursework that semester, environmental studies students produced a 100-page document that outlines why and how the college should take actions to honor the first nations of the land it occupies. A presentation given by students demanding that the college attend to its responsibilities was poorly attended by administrators, and the college’s proposals to develop the land continue to ignore obligations to Lenape people. I left my position after a year, but the dedication of my colleagues and students to these issues remains. Overall, I learned that my failures in the praxis of allyship were due to failures in building relationships. Building relationships enhances our collective power and our influence over the structural conditions in which we teach. Can decolonizing pedagogies that heal self, land, and community begin any other way?

Healing Ancestral Alienation with the Truth

Let me begin with the truth: I am Wayne Wapeemukwa, an Indigenous (Métis) graduate student who struggles with alcoholism. I grew up on the west coast of Canada, away from my Indigenous homeland. As a child, I witnessed my father look down on my mother’s Métis heritage, and indeed, I adopted some of those very racist beliefs myself. This trauma was collaterally triggered by the rigorous exigencies of graduate school, where I began to rely on alcohol as a way to make up for my lack of connection, relationship, and family. Worse, the COVID-19 pandemic forced my school to migrate online. While this solitude initially benefited my productivity, it also imposed new challenges because I was literally cut off from peers and kin. I continued to push myself to meet the expectations of my doctoral program, and it was in this context that I turned to alcohol. I began to process this truth in monthly meetings with my co-authors, where we discussed the broader historical context of my disease to decolonization. I share that historical context here.

My great-great-great grandfather, Fred Schindler, left his home of Kent, England to enlist with the North West Mounted Police at Fort Qu'Appelle, Saskatchewan in 1878. Although he was sent deep into the Northwest, far from his home, Fred did not outrun his penchant for alcohol. As a Mountie, Fred took bribes by selling patrol schedules to bootleggers. After this was revealed, he fled his post but was soon captured and sentenced to 12 months' imprisonment with hard labor in Fort Calgary. Remarkably, Fred escaped and fled south to the United States, where British authorities could not follow. Deep in the Turtle Mountains, in what is known today as North Dakota, Fred met my great-great-great grandmother, Elise Lenoir, a Métis originally from the historic settlement of St. François Xavier. In the Turtle Mountains, Fred and Elise co-founded a saloon and horse and cattle ranch. In 1889, Fred became a Deputy US Marshal. Over the next 12 years, he used his government and settler privileges to bootleg and Elise used her Indigenous kinship networks throughout the Red River and Turtle Mountains to find buyers. But, in 1902, the tap finally ran dry when Fred was charged with defrauding the government. On November 21, 1902, the *Bismarck Daily Tribune* revealed that, on the night before his trial, Fred celebrated what was likely to be his last night of freedom at the Hotel Metropole. The newspaper noted that, sometime between midnight and four in the morning, Fred attempted to escape but was too drunk and got caught. He was subsequently sent to the State Penitentiary in Sioux Falls, South Dakota, where he died two years later with Elise by his side.

Reflecting on Fred Schindler's story makes me sad and happy at the same time. On the one hand, the absurdity of his repeated infractions and proclivity for defrauding the police make me laugh. On the other, his history of alcoholism, abuse, self-harm, and abandonment strikes a deeper, more personal chord. While Fred and Elise demonstrate a resilience and resistance that runs through my entire Métis family, they evidence an equally tenacious relationship with alcohol. This story pushes me to question why alcohol has had such a powerful impact on my family. My sobriety provides me with a relatively simple answer: loneliness. In a word, the legacy that settler-colonial dispossession directly imprints upon me is the feeling of being alone in spite of my deep family history on our homeland. I realized that community was the only panacea for my alcoholic and ancestral alienation.

In 2019, I returned to the West coast, where I began making trips into the Métis homeland, retracing the steps of my ancestors and reconnecting with kin. Returning "home" made me realize how deeply I was alienated from my own ancestors and how I was using substances to make up for this "ancestral alienation." In a flurry of words and anxieties, I expressed this to my family and Elders. I remember being taken aback by the care and patience that my elder, Aline LaFlamme, provided: "Let me wrap my blanket around you," she said. With kind words, open ears, and soft hearts, my aunties and loved ones provided me the space and knowledge to reconnect. I was advised to expand my circle and reach out to my relations so that I could find a mast to lash myself to and escape the vortex of alcoholism. Returning home was essential to my decolonization because it allowed me to see first-hand how the decisions my ancestors made ultimately led to my survival, and I learned that my affliction was not mine alone to bear.

I tell you this because I believe that it is important for teachers to teach truthful socio-cultural and political histories that inform the contemporary and personal contexts of their students, families, and communities. The truth can be harsh but it can also be helpful. Telling the truth to students helps them to critically analyze, resist, and heal harmful narratives about themselves and their people. Telling truths about *yourself* can be a hard and painful process, no doubt, but it can also reveal deeper logics about settler colonialism. Indeed, an essential part of my own personal decolonization was admitting the truth to myself that I was an alcoholic, and that my alcoholism could ultimately be traced to dispossession. I could only realize this truth after returning home and critically analyzing my ancestral alienation. The critical analysis of my family's history was not the whole story, however. That truth

led me to understand how settler colonialism works to separate me from my Indigenous background, family, and lands. When I reconnected with my family, I learned that my relationship with alcohol was a part of a longer history ultimately grounded in dispossession. Understanding that context pushed me to identify the effects of settler colonialism within me, specifically, the isolation from my family and homelands, and the toxic coping mechanism of alcohol abuse.

As an educator, I share my story with my students at the beginning of my course. I make myself vulnerable by telling this story so that students can feel comfortable to engage in similar community-building practices. I talk about my upbringing as a Métis person who grew up away from my homeland; how this removal fed into my alcoholism; and most importantly, how I ultimately overcame that affliction by reconnecting with my family and community. By telling the truth about my journey, I demonstrate the power of a relational approach to education. As a sober Indigenous educator, I seek to empower students to reconnect with themselves, their ancestors, and a world which they can re-imagine by healing “ancestral alienation.”

DISCUSSION AND PRACTICAL RECOMMENDATIONS IN FULL CIRCLE

This paper highlights the importance of building relationships with Indigenous communities and families and connecting to the land when creating decolonizing curriculum for Western educational institutions. Our stories demonstrate how Western education imposes institutional measures that disconnect the mind, body, and spirit from the lands and people that bring them together. Wayne shared how his personal decolonizing processes led to his renewed commitment to education as an ameliorative and decolonizing praxis: Education must repair. Paul shared the way his attention to including Indigenous perspectives opened the door to rethinking and reformulating campus sustainability projects and uses of grant funding. Hollie shared how her feelings of discontent with her course pushed her to engage pre-existing relationships with Indigenous communities, and how it led to important relationship-building between these communities and the university.

These conclusions may seem like common knowledge to some. However, when we get into the everydayness of the demands on educators, it is too easy to teach and function within a western institution that privileges and rewards inauthentic relationships to place and to each other. Such structures incentivize and perpetuate objectivity and individualism, furthering disconnection from lands. To implement our Indigenous and decolonizing pedagogy under such structural conditions was challenging. None of us were strong enough to walk this path alone. We needed each other. We hope that our stories engage readers and spark new ideas for them to stay connected to their whole selves, Indigenous communities and families, and lands.

The following are recommendations for practices that helped us to reconnect the mind, body, and spirit as teachers and learners in western institutions. We write these with the understanding that all educational institutions on Turtle Island are built upon Indigenous lands and all levels of education are implicated in settler colonialism. We hope that Indigenous students, families, communities, and nations thrive in the areas where you live and work. Decolonizing curricula and pedagogy cannot exist without these relationships. Valuing and building relationships should become the first work that we do to create and implement decolonizing curricula. It might not be easy, but it is necessary. These questions can help guide your own inquiry for working towards Indigenous and decolonizing curricula and pedagogy: Who are the Indigenous peoples of the area? With whom should we build relationships? What are the histories between my western educational institution and the people? How can I be intentional about supporting Indigenous goals/sovereignty? The recommendations for practice are to:

- Build relationships with Indigenous students, families, groups on campus, surrounding communities, and nations.

- Be knowledgeable about the relationships educational institutions have with Indigenous nations in order to formulate your goals. These relationships may be tenuous and fraught by historical traumas, so you might have to work with Indigenous students, families, groups, communities, and/or nations to create new and restorative relationships.
- Align the goals and duties of your job description or vision statements with the work you want to do with Indigenous communities or those who support Indigenous students and/or sovereignty.
- Create curriculum in ways that make space within learning objectives, assignments, and instructional strategies for relationship-building between students and Indigenous organizations, communities, and lands.
- Identify colleagues with whom you can have conversations and share stories and who can help keep you accountable to your goals for creating and implementing decolonizing curricula.

It is not enough to bring diverse educators and students into the same exclusive spaces; deeper structural changes to education are necessary. As co-authors and friends, we continue to meet, discuss, and support each other as we work to decolonize our practice and selves as educators. We invite others to join us in this shared process of creating knowledge and uplifting Indigenous sovereignty.

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ABOUT THE AUTHORS



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Wayne Wapeemukwa is a doctoral candidate in philosophy at Penn State University. His research reanimates dialogue between Marxism and Indigenous political theories as they engage questions of land, race, capital, and history. He specializes in 19th and 20th century Marxism, its uptake among Indigenous activists, as well as Indigenous feminist approaches to decolonization. He is a citizen of the Métis Nation of British Columbia and member of the Chartered Métis Community of Waceya.

Go With the Flow: Indigenous Science in the Language Classroom

Stephany RunningHawk Johnson and Sequoia Dance-Leighton

The Confederated Tribes of Warm Springs, the Confederated Tribes of the Colville Reservation, and the Coeur d'Alene Tribe are located in what we now call Washington, Oregon, and Idaho in the Pacific Northwest of the United States. Paula Groves Price, Zoe Higheagle Strong, and T. Francene Watson are three professors in the College of Education at Washington State University (WSU) who have dedicated time and energy to cultivate and nurture relationships with educational leaders, Elders, and teachers within these Indigenous communities. Through these relationships and previous projects, as well as a memorandum of understanding (MOU) agreement between WSU and the tribal entities, they envisioned a project to work together on centering Indigenous knowledges and cultures while teaching science and language. Dr. Groves Price, Dr. Higheagle Strong, and Dr. Watson worked closely with contacts at the Paschal Sherman Indian School, the Nespelem Elementary School, the Warm Springs K-8 Academy, and the Coeur d'Alene Tribal School to shape a project that would include cultural and language aspects into the science curriculum desired by the tribes. This project was a collaborative effort that would not have happened without the generous time, energy, and knowledge contributions of the tribal peoples we, researchers and writers, worked with and learned so much from.

In 2017, the team from the three tribes and from the College of Education at WSU received a grant from the National Science Foundation to work on the project they called Culturally Responsive Indigenous Science (CRIS). The three main goals of the CRIS project were to 1) develop and implement culturally responsive Indigenous Science, Technology, Engineering, and Mathematics (ISTEM) curriculum modules that integrate Indigenous knowledge, culture, and language with western science and technology, 2) conduct culturally responsive professional development for teachers to effectively integrate ISTEM curriculum and technology into classroom instruction and assessment, and 3) provide supplemental hands-on enrichment programs for Native American students to engage with ISTEM projects and experiments outside of the traditional school environment and on the WSU campus.

The CRIS project began in Fall 2017 with a focus on building relationships between participants from the Confederated Tribes of Warm Springs, the Confederated Tribes of the Colville Reservation, the Coeur d'Alene Tribe, and WSU. Participants included mostly teachers from the tribal schools and professors and students from WSU, but community members and Elders were also in attendance to provide guidance and advice. Each tribal entity has different languages and different cultural practices and beliefs. However, Elders and community leaders felt they could learn from each other while keeping their curriculum true to their ways of knowing and being.

In the first year of the CRIS project, there was a strong focus on creating classroom curriculum that taught science concepts and skills along with traditional cultural practices and language. Some were designed to be taught in science classes and others in Indigenous language classes. The focus on developing and revising curriculum ran throughout the entire project, as the curriculum is always changing, along with the teachers and the students interacting with it. What we found, and perhaps should have known at the beginning, is that a curriculum is not a static document that is ever "finished." Our tribal partners reminded us of this, and it is a lesson that we continue to reflect on.

Table 1 summarizes the main activities from the CRIS project and the outcomes of those activities. A focus on relationship-building and curriculum development carries on throughout the entire project.

We were forced, as was the rest of the world, to adapt during project years three and four, when most activities were put on pause because of COVID-19. Despite being unable to hold in-person events, we continued working on curriculum through Zoom meetings. In Summer 2021, we began slowly, and with utmost care, to meet in small groups to finalize curriculum and plan implementation. In the fifth and final year, 2021-22, we brought students to WSU’s campus in small groups, met with each of our tribal partners individually, and piloted curriculum implementation in schools.

Year	Activities	Outcomes
2017-18	WSU visits to Colville, Warm Springs, and Coeur d’Alene tribes	Relationship-building
	Two meetings of all partners	Relationship-building, curriculum development
	Student field trip to WSU	Student exposure to STEM and higher education institution
	Teacher summer institute at WSU	Curriculum development, assessment of teacher needs and wants
2018-19	WSU visits to Colville, Warm Springs, and Coeur d’Alene tribes	Relationship-building, curriculum development, and revision
	Third meeting of all partners	Relationship-building, curriculum development, exploration of co-teaching and curriculum sharing
	Two student field trips to WSU	Student exposure to STEM and higher education institution
	Teacher summer institute at WSU	Curriculum development and revision, assessment of teacher needs and wants
2019-20	WSU visits Colville, Warm Springs, and Coeur d’Alene tribes (before COVID)	Relationship-building, curriculum development, and revision
	COVID protocols put in place	Project on temporary hold
2020-21	Online meetings with all partners	Curriculum development and revision, project moving slowly
2021-22	Two WSU visits to Colville and Warm Springs	Relationship-building, curriculum development, and revision, curriculum implementation
	Bi-weekly visits with James Whistocken LaSarte at Coeur d’Alene	Curriculum implementation and reflections
	Student field trip to WSU	Student exposure to STEM and higher education institution, conversations with teachers about future goals and plans

Table 1. CRIS Project Activities, 2017-22

A FOCUS ON COEUR D'ALENE

In this essay, we explore a small piece of the CRIS project with our Coeur d'Alene (Cd'A) partners. We detail the lessons learned and contemplate further work and learning from this project and the collaborations and relationships we have developed and continue to nurture. Paula Groves Price was the initial Principle Investigator for the CRIS project at WSU. When, in 2020 she took the opportunity to move to a different institution, she asked Stephany RunningHawk Johnson to work on the project. While there are many collaborators and contributors on this project, the story of this piece of the CRIS project work is written and shared by Sequoia Dance and Dr. RunningHawk Johnson. Sequoia is Shoshone-Bannock from Fort Hall, Idaho, a PhD student in Cultural Studies and Social Thought at WSU and an Indigenous Wellness Advocate. Stephany is Oglala Lakota, an assistant professor of Cultural Studies and Social Thought at WSU, a former middle school math and science teacher, an Indigenous feminist scholar, a mother and partner. We both identify as Indigenous women *and* as guests in the communities represented in this project. We, along with our other WSU team members, have taken great care in developing and fostering relationships with community partners, and Sequoia in particular had developed relationships with the Coeur d'Alene community from prior work with WSU, as well as community events such as powwows and wellness/youth events.

During the 2021-2022 school year, we—Sequoia and Stephany—worked with James Whistocken LaSarte, language teacher at the Coeur d'Alene Tribal School, to implement science curriculum in his snchitsu'umshtsn language class. James has been part of the CRIS project from its inception and has participated in all stages of relationship-building, student visits, teacher professional development, curriculum development, and curriculum implementation. Many times during our work with James, we would ask his opinion, and more often than not he replied, "I just go with the flow," and the saying stuck. We have taken it as the motto for this project in multiple ways: the changes in the curriculum, the changes in personnel, the COVID protocols that interrupted so much of daily life, and the title of our paper. James started as the language teacher at the Cd'A tribal school the same year we began work on the CRIS project, but he had been working with youth for a long time in informal settings as a coach, mentor, and employee at their community center. The curriculum developed by and with James and other Coeur d'Alene language department folks is a living document acting as a guide to help James, and us as researchers and teacher educators, think about ways we can assist non-tribal science teachers to incorporate culture into their lessons.

INTEGRATING INDIGENOUS WAYS OF KNOWING WITH WESTERN SCIENCE

The CRIS project focused on teaching western science and centering Indigenous culture and language simultaneously. To hold these two concepts in tandem, we must remember that "underrepresentation in science will never be remedied by better schools, better curricula, better teachers, and all other betters that leave science itself as pure and beyond examination. We are arguing that science learning and participation in science are relational in nature" (Medin & Bang, 2014, p. 240). Teaching science based on tribal cultural values "requires us to ground our pedagogy and curriculum in a sense of relatedness and reciprocity to and with all living beings... the focus must be brought back to connections and the relatedness of all beings, as well as include an expanded understanding of who counts as a member of the community" (RunningHawk Johnson, 2018, p. 89). Indigenous knowledges put science and students in relation with each other in powerful and important ways.

Indigenous knowledges are powerful and ancient as well as contemporary and compelling. Robin Wall Kimmerer (2017) tells us that "In English, we never refer to a member of our family, or indeed to any person, as *it*. That would be a profound act of disrespect. It robs a person of selfhood and kinship, reducing a person to a mere thing. So, it is that in Potawatomi and most other Indigenous languages, we

use the same words to address the living world as we use for our family. Because they are our family” (p. 131). Kimmerer highlights the importance of relationships and the differences between Indigenous and western ways of knowing.

We use the phrase “go with the flow” purposefully because it captures the informative, nuanced, and reflective ways that “storying” as research centers Indigenous ways of knowing, teaching, and learning and highlights “how our communities work” (Brayboy, 2006). We remind our readers of the ever-present tensions inherent in teaching western science to Indigenous students; western science is often analytical and reductionist whereas Indigenous knowledges are intuitive, holistic, and passed through oral traditions. As Mazzochhi (2006) writes, it is “exceedingly difficult to analyse one form of knowledge using the criteria of another tradition” (p. 463). Perhaps, by moving within and through these tensions, non-Indigenous teachers working with Indigenous students can better understand why and how they need to honor and center the culture and language of their students.

While it is certainly imperfect, we hope to confront and illuminate the CRIS project as an example of a transformative praxis, an empowering tool for Indigenous education, and as an “ideological and implementation space” (Hornberger, 2002; Hornberger & Swinehart, 2012) to do decolonizing work within and for communities. Our intention is to create spaces in which students, community members, Elders, and teachers are empowered to reclaim and reassert Indigenous knowledge and lived experience as central to their curriculum and pedagogical considerations, allowing the values of relationality and reciprocity to lead.

Education is, and has always been, important to Indigenous communities. In our current institutions and systems, some education is achieved through schooling, and we choose to work within the school-based curricular structure that is in place. Our tribal partners asked us, as “education experts,” to help them create a curriculum they could use to do this work. The Elders and community members guiding and advising the CRIS project expressed their belief that curriculum created through the CRIS project could do decolonizing, and perhaps even Indigenizing, work in their communities. They provide the language and cultural knowledge; we provide the curricular structure and other school-based supports. We feel both honored and obligated to take on this work at their request.

From our reflections as authors and as a larger WSU research team, the experiences we had with all the project participants, and the voices of our tribal co-researchers, three important themes emerged. As we sat down and talked through notes, team conversation transcripts, interview and focus group transcripts, and observational data, there were three topics that we kept returning to again and again: the challenges of using the curriculum template that we developed, the complexities of teaching science in the language classroom, and the skill with which James used Indigenous teaching and learning methods with his students.

THE 7E CURRICULUM TEMPLATE

The 5E instructional model (Bybee, 2015) is commonly used by science teachers to structure their lessons in ways that center students and encourage them to explore in order to better understand science concepts and develop their problem-solving skills. This is very much a western construct and is commonly taught to pre-service teachers for use in their classrooms. For the CRIS project, this model was adapted to make it more applicable and relevant for students in tribal schools, the majority of whom are tribal members.

The five E’s are: engage, explore, explain, elaborate, and evaluate. The partners liked these elements of curriculum planning but felt that for Indigenous students, an additional two E’s would help make the template more culturally relevant, as well as allow for the creation of curriculum specific to each cultural

context. Elders and Indigenous teachers were crucial to the discussion surrounding the importance of the inclusion of the two additions, which are: environment¹ and Elders. The 7E template (Table 2) is set up to show traditional ecological knowledge learning, western science learning, and language learning outcomes simultaneously. Note that “environment” has been combined with the “explore” E.

Teacher: _____ Subject: _____ Grade Level: _____ Week of: _____
 Unit Title: _____ Unit Length: _____ Class Period Length _____

CRIS Cultural Values:			
Traditional Ecological Knowledge learning outcomes:	Nature of Western science learning outcomes:	Language learning outcomes	Technical and practical learning outcomes:
Students will understand and appreciate: •	Students will understand and appreciate: •	Students will be able to: •	Students will be able to: •
Assessment(s): •			

Lesson 1:						
Micro-Tasks (iPad or on website):				Key student outcomes:		
1.1				•		
1.2				•		
1.3				•		
Technology Integration				Key Terms, Phrases, Sentences (English/Tribal Language):		
Gathering Content and Data						
Interactive Web-based Activities						
Resources (Archival, PPWP, manipulatives)						
Day	Engage	Explore/ Environment	Elders	Explain	Elaborate	Evaluate

Table 2. The 7E Template

We are not able to share a fully filled out template with curriculum that has been created by our tribal partners, as we do not have permission from them to do so. However, we would like to give a few

¹ In the template, the categories of Explore and Environment have been combined into one column, so there are a total of six headings.

examples of what the content of the template can include. The (Traditional Ecological Knowledge) TEK learning outcomes include students understanding the harvesting of traditional foods and how that relates to survival and that water potato gathering sites were interconnected with wildlife. The western science learning outcomes include students understanding that water potato harvest has been impacted by dams and pollution and that water health can be measured in the lab. Key terms include many words in the Coeur d'Alene language along with their English translation. On any given day some of the 7E columns are filled in while others are not. For example, a day might include Engaging by having key words on the board with a call and response session and Elders joining and sharing a traditional story. Elaboration may happen by having students share their family history relating to the water potato harvest.

Curriculum content creation began in group meetings with cultural experts, language holders, and teachers from all three tribal nations, as well as the WSU team. During the initial stages, the group chose to focus on writing a series of lessons for each of the four seasons. At the direction of the Elders and community experts, the seasonal themes chosen were traditional food preparation for fall, storytelling for winter, root knowledge for spring, and plant identification and gathering for summer. These themes are used as the Unit Title in the template. The overall theme of each season would be similar for each tribe, but the content of the lesson would be unique to each tribe's place and traditions.

Once the larger group had decided on the seasonal themes, the work was done in smaller groups focused on each tribe and their specific content, with time to share out to the larger group. The WSU team took the lead in translating the knowledge and skills into a 7E lesson plan that included technology and western science alongside the cultural and language aspects. We compiled information for one season at a time, learning from and with each other, with language teachers and cultural experts talking and sharing their thoughts and ideas. As the curriculum began to take shape, we recognized that language and science naturally work well together in these lessons because science is embedded within the language to understand the stories, the sites for gathering, and the world around us.

Using the 7E template, the team began to develop written curriculum for each season that reflected and centered the Indigenous knowledge of the tribal partners with the western science curriculum. Each tribal partner has completed at least a partial set of lessons for each season; however, we are reminded that none of the curriculum is ever truly "finished." The CRIS curriculum is housed with the individual teacher(s) that worked on it in each school, as well as in a central password-protected website accessible to the entire team.

7E AT COEUR D'ALENE

In Coeur D'Alene, the fall lesson was focused on gathering and preparing traditional foods—on gathering and preparing water potatoes. The water potato (*Sagittaria latifolia*), which is also called arrowhead or wapato or duck potato, is a wetland plant with arrow-shaped leaves. It produces small tubers—or potatoes—on its underground stem. These small tubers are eaten raw or roasted, boiled, or fried and taste a little like a potato or a chestnut (Sqigwts Ha'chsetq'it, Water Potato Day Info Brochure, 2011; Missouri Botanical Garden, 2023).

At the Coeur d'Alene Tribal School, the CRIS curriculum is being implemented by James. Due to a lack of resources and teacher availability, there has been minimal involvement with the school's science teacher and program, which posed some challenges in utilizing the 7E tool.

James, a tribal member, reflected on his initial interactions with the 7E template. He was unsure of how to utilize it best, considering he had not gone through a western teacher training program: "I guess I thought I wasn't a teacher... I just wasn't the teacher that understood the E's. Or any other type of

curriculum format that most teachers get in school.” James and the team of language experts expressed having difficulty using the tool to organize their lessons because they often structured their teaching around the students’ interests and their own community events. We had hoped that teachers like James would be able to collaborate with the science teachers in their schools so that they could help each other understand different aspects of the 7E template. James once again showed us that we needed to “go with the flow” and assess the template and curriculum as something that could be used by one teacher rather than a team of teachers.

Other challenges that we encountered include the fact that the language class in the Cd’A tribal school is an elective rather than required, with students and their parents choosing between language, art, and physical education. The class is also shorter than the “regular” classes, running for 30 minutes rather than an hour. Implementations (particularly partnerships and field trips) were impacted by the COVID-19 pandemic and the resulting community safety measures. These measures caused James and other teachers to make substantial modifications to their usual teaching practices.

The difficulties felt by the Cd’A language team were not because there was a lack of science knowledge within the team or that the template was missing something, but because the template did not represent the way in which they think about their lessons. James typically centers students in his lessons as he decides what to focus on and what to teach each week and did not see how he could do that with the 7E template. Sequoia, along with other members of the WSU team, stepped in to help James use the 7E template to create lessons that revolve around student needs, as well as the happenings and cultural events within the community.

A large part of the WSU teams’ role was supporting James in cultivating an understanding that he was already making connections between Indigenous knowledges and western sciences. Implicitly, James utilized place as a sense of direction for his lessons. In Indigenous ways of knowing the “place in which one lives provides the connectedness of all things, the relationships between all things, and therefore place gives us a base for teaching about the natural world in the context of science curriculum” (RunningHawk Johnson, 2018, p. 88). With this understanding and notion of place, we were able to work with James to shift his perspective on his value as a teacher, specifically to affirm that what he was sharing *was* science, and to better support him in the documentation of the curriculum.

An example of this curriculum that James and the WSU team developed were the fall lessons surrounding sqigwts (water potato). While students were very familiar with the Water Potato Days event that the Coeur d’Alene community holds every year, they began to learn the language around gathering and the places in which they gather. Students were challenged to learn and identify ancestral locations in which sqigwts were gathered, using digital interactive content that was created by James. James used a map for this, showing “numerous places where water potatoes used to be and were picked.” He developed another piece of interactive content to show how the gathering areas on the map have changed and are now smaller and more fragmented than they were historically. He continued to reflect: “[N]ow it’s only in certain areas, where now you’re taking the size [of that area] and saying well, why aren’t they in these areas? There’s just little pieces that are being put in there. I mean, most of these kids have been doing the water potato dig forever not realizing that... it has to do with placement or... [that] they’re able to eat it.” Using the interactive digital maps and language, the classes also discussed why they might not gather from certain places anymore. James uses this opportunity to teach his students about habitat loss due to changes in the lake caused by irrigation for agricultural use and pesticides.

Another component of the water potato lessons includes water testing to learn the ways in which water quality might impact the growth and safety of the sqigwts. Unfortunately, due to COVID restrictions and in order to maintain community safety measures, this was something we were unable to implement.

James asks: “Are they sure they’re able to eat it because it’s there? It could be poisonous or be weird, that’s where implementing all of the, like the lake management stuff of water testing and whatnot was coming into a huge part of the project.” Answering this question can incorporate both Indigenous traditional knowledge about where water potato is found and how to keep it healthy with modern science techniques of water quality testing.

Stephany RunningHawk Johnson and Michelle Jacob (2022) write that we empower students through reclaiming Indigenous knowledges in educational settings, to “embrace their ways of knowing and being, to celebrate our/their relationship with Land rather than domination over it, and to create better relationships with Land that have the ability to ameliorate the climate crisis” (p. 178). The 7E template is one way to create a western science lesson plan that centers Indigenous practices, languages, and knowledge within classrooms as well as providing a way for non-Indigenous teachers to pick up that lesson and carry it forward.

SCIENCE IN LANGUAGE CLASS

James completed a curriculum that represents the deeply meaningful and intricate relationship that language has with the land and furthered the relationship of the students with that knowledge of their homelands. He came to the project seeing himself as someone who knew his traditional language and who liked working with kids. He did not see himself as a teacher, and certainly not a science teacher. In fact, he tells us that “I hated science. Myself, I don’t know why, but it was a horrible subject.” He goes on to say that “I don’t care for science. But I know the language part I can do, that I can step in and help where needed. I just don’t expect to write up any lesson plan science.”

We believe that Indigenous languages and science are intricately connected, that “the language reminds us, in every sentence, of our kinship with all of the animate world” (Kimmerer, 2017, p. 132), so part of this project became about showing James, and others, that through language he was already good at science, and good at teaching it. We could clearly see the science involved in the sqigwts lesson that James designed. James knew that sqigwts are edible, where to find them, how to gather them responsibly, and how to prepare them as a traditional food.

As we worked together, James began to see that teaching his students language and culture included a lot of science. James says that it “kind of blew my mind that there was a lot of stuff that we were doing traditionally, that was still science.” This happened through conversations with WSU team members Sequoia, Stephany, and Francene, as well as developing the curriculum into the 7E template. James said that “working with all this stuff, and then realizing that most of it is science itself was like a huge kind of like eye-opener.”

He also appreciated the support of the WSU team. He said that “having the actual teacher to sort of be able to notice what we’re doing here, integrating the western science itself, to like mash that up was like, that’s why I am drawn to this project.” We, as researchers, often saw and continue to see our role in this work as interpreters—in this instance interpreting what science is and can be and affirming for James that perhaps the most important aspect of his work was affirming his students’ cultural identities.

Teaching students language and science together makes a lot of sense, if you are coming at education from an Indigenous worldview. Indigenous science consists of traditional ecological knowledge, is grounded in place, language, and reciprocity, and includes “knowing the world through diverse perspectives” (RunningHawk Johnson, 2018, p. 89), which often include the land, water, plants, and animals. Cariou (2018) writes that “Indigenous philosophies of language and belonging reverse the trajectory of Western mimesis, starting with the land as the source of not only sustenance but also of knowledge. If we follow the implications of this idea, it means that when we study Indigenous stories

and literatures, we are in a way studying the land and trying to learn from it” (p. 341). Linda Tuhiwai Smith (2012) defines traditional ecological knowledge as “environments, bodies, stem cell lines, identities, historical and contemporary practices, lores, laws, values and belief systems, knowledge frameworks, ways of thinking and knowing, products and creations, concepts” (p. 221) and more.

“Our toddlers speak of plants and animals as if they were people, extending to them self and intention and compassion—until we teach them not to” (Kimmerer, 2017, p. 133). But if we keep teaching them that our more-than-human relatives are just that—our relatives—then we all have a different sense of connection, relationship, and responsibility.

By teaching science in the language classroom and in the Coeur d’Alene language, snchitsu’umshtsn, James is teaching his students that their cultural understandings of who counts as a person and a community member is broader than simply the humans; he is bringing in all his more-than-human relatives and the land as well. And, because “language was given to us by the land we live within” (Armstrong, 1997, p. 175), James is teaching his students both language and science, his lessons revolving around the lives of the community and the families as they practiced their traditional cultural values and ways of working with the land.

The 7E template offers a western tool and structure to help build a bridge to teachers who may not be aware of these life lessons in the community. For non-Indigenous teachers coming into this community, learning about, honoring, and incorporating the Cd’A worldview and Indigenous science into their teaching is crucial. As Susan Dion (2007) writes, “the majority of teachers... have a limited understanding of Aboriginal people, history, and culture; rather their understanding is informed by dominant discourses” (p. 330). Brayboy and Castagno (2008) write that “in order for teachers to engage in culturally responsive science education for Indigenous youth, they need a particular set of knowledge that they do not currently receive in teacher training programs” (p. 744). However, there is also the possibility that non-Indigenous teachers can learn from teachers like James, that they can “take up alternative ways of knowing, to imagine new relationships, and to think about how they might want to work toward transforming their practice” (p. 330). By collaborating with teachers and language experts such as James, we can give non-Indigenous teachers a better way to work with Indigenous students and communities.

INDIGENOUS TEACHING AND LEARNING METHODS

James is an excellent teacher, and while he is very humble, we see the brilliance and care with which he teaches and works with his students. We learned so much from James, and we are grateful for this gift. He is not a university-trained teacher but he has both the cultural and content knowledge to engage with his students in culturally responsive ways that honor Coeur d’Alene culture and traditional tribal values. Kirkness & Barnhardt (1991) describe the four R’s of Indigenous education: respect, relevance, reciprocity, and responsibility, and we see James doing all of them with his students. He says, “I feel like kids should be involved more. Because I mean, I’m a big kid. But, like a bunch of adults trying to decide how to do this for kids. It becomes like, you put it in front of kids, and they’re like, I hate this. And they try to figure out why. Ask the kid, the kid will tell you why.” James respects his students, he makes his teaching relevant to their lives, and he has a strong sense of why he teaches, as well as a responsibility to teach in good ways. He respects his students enough to ask them their opinion, to know that they can tell him what they are thinking and feeling, and to honor what they tell him.

Children are not forced to learn if they are not “into” it; they are still in the classroom and around the lesson and material but they have a choice of whether or not to engage. They learn to not disrupt those who do want to learn, but they do not have to participate. This educational practice shows how the

“reciprocity relation is not a circle but instead something more like a scattering... This gift is intended to be shared anywhere, without restrictions, as long as it is shared” (Cariou, 2018, p. 346). James demonstrates this beautifully.

Another aspect of Indigenous education that James demonstrates is relevance, with the use of intergenerational classrooms. James describes that “the way I wanted to do it was teaching kindergarten to eighth grade. That’s why all of them would be, like, universal, because usually that’s how my class is. I mean, the little kids don’t learn as extensive as eighth graders, but they are still basically learning the same thing throughout the same time.” James asserts that the larger goal “is getting them to be able to talk to each other.” He employs intergenerational learning intentionally and at all times in his classroom.

Brayboy and Castagno (2008) write that “aspects of effective science education for Indigenous youth include learning in an environment that is rich with the language of science, curricular content that is interesting and relevant, beginning with the natural environment of the students, including Elders and community members in curriculum development and presentation, incorporating oral traditions as a source of knowledge about the natural world, and supplementing textbooks with other curricular materials” (p. 743). Another Coeur d’Alene language teacher gave a perfect local example of how teaching in the traditional ways outlined by Brayboy and Castagno is good for his students. He said “there’s no lesson plan for grand entry². That’s just an experience that you go through. And even then, if somebody came and asked you to be the arena director for a *powwow*, and, you know, you’ve been going to *those* your whole life you don’t say, well, how do I do this? Could you write that down for me? No, you just, you go, you learn and you watch and then you just do it.” This type of teaching and learning requires learning from Elders and community members, from oral traditions that have been passed on through many generations.

ONGOING QUESTIONS

As researchers and teacher educators we want to continue to reflect on our process and the generous lessons brought to us by our community partners. We see value in both Indigenous and western sciences and continue to struggle with how to center Indigenous science when it has been erased in colonized schooling systems for centuries. As Indigenous women, we know the value of continuing to nurture and cherish the relationships we have built with James and others in the language department of the Coeur d’Alene tribe. Here are some of the challenges that we have not resolved, as well as questions that we want to keep working on. These are not necessarily questions that could or should be answered right away but ones that we feel it is important to reflect on when doing this type of work.

How do we communicate that cultural knowledge *is* science without creating a hierarchy where western science is most important? Is naming science within cultural knowledge important? If so, to whom?

We think there need to be times when we affirm with Indigenous teachers and students that their knowledge of reading maps and identifying and locating *sqigwts* is science, the kind of western science they learn about in school. It feels appropriate to ask ourselves questions regarding the balance between affirming cultural knowledge as legitimate within western education and letting the knowledge exist as is, affirming its importance without tying it to a word that we as researchers and educators understand as science. We recognize that other scholars have wrestled with this question; however, we still see it as relevant. Perhaps putting Indigenous science first might mean that we intentionally do not call it science because it existed prior to the school subject of science.

2 Grand Entry is the beginning of a powwow session of dancing.

How do we demonstrate to non-Indigenous, particularly White, educators trained in western schools that culture in the classroom is important and is part of school? Do we need to make this point?

Our work with James and other folks from the Coeur d'Alene tribe shows us that they already know this. For educators coming to tribal communities from western teacher training programs, the answer is yes, we do need to make this point. Brayboy and Castagno (2008) write that we “must come to see that there are multiple legitimate ways of knowing that must enter the science ‘classroom’. The epistemologies and sciences of tribal nations have enabled them to survive for thousands of years, and this knowledge is relevant to contemporary science learning” (p. 739). We fully agree. We hope that the work we have done and will continue to do with James can help us create templates and curriculums that will further this type of work.

Curriculum templates are useful, but for whom? How do we create tools that empower Indigenous knowledge-keepers and teachers, while also not burdening them with the creation of a “bridge” into the western education world?

This question is the heart of the pedagogical considerations in this essay. The 7E template is a useful way to work through science curriculum that centers Indigenous knowledge within a western education system. Non-Indigenous teachers trained in western institutions can understand and recognize the 7E template. It allows us to outline what we hope the lessons can and will accomplish. When James was asked if he found the template to be useful, he responded, “For me specifically, no. But... if I give it to a teacher that comes in, they can teach it and they understand most of that because I think the way it was explained was like the seven E's was the easiest model to follow for everybody.” While James may not find the template the most useful tool he has available to him, many teachers will find it useful, particularly those who are non-Indigenous and have gone through a teacher training program at a university.

One of the tribal language teachers asked if there was a different way of doing lesson plans, specifically Indigenous lesson plans. This prompts us to pause and think about who curriculum templates are made for, how they can be helpful, and most importantly how to adapt them to meet the needs of our Indigenous knowledge teachers. We also ask ourselves how we as researchers and teacher educators can take on the work of creating templates that are usable and understandable by non-Indigenous educators working with Indigenous students, while centering Indigenous knowledges and values in curriculum.

We ask ourselves, as researchers at a university, how projects similar to this one can be successful. We believe that we must define our roles as collaborators and translators—not as knowledge experts. The language teachers and cultural experts from each tribe are the knowledge experts and we must listen to them and defer to them. We must ask them what they need and want and how we can best support them. It is evident to our team that any success coming out of the CRIS project is mostly due to teachers and knowledge-sharers like James, to our tribal partners and collaborators. James is committed to being in right relation with his students, his community, and his place. He meets his students where they are, with encouragement and support to take ownership of their learning. James, with the help of his language team, is a science teacher and we, as researchers, Indigenous women, and human beings are extremely grateful to have worked with him, his students, and the Coeur d'Alene language department team; to have been invited to “go with the flow” with them.

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Through My Body and in My Heart: A Primer

Bryan McKinley Jones Brayboy

How do we think about Indigenous Knowledge Systems (IKS)? I want to offer here my own thinking about what IKS are. There will certainly be debate about this. These are my views only; they serve as an invitation to others to share their own ways of outlining these crucial ideas.

IKS are—for me—fundamentally about the intersections between philosophical ideas and the daily realities of tribal nations, communities, and other entities that comprise the peoples who belong to them and their lands and waters. Before I discuss this further, let me be clear about what I am NOT engaging here. These are not sacred or limited knowledges. They are not specific knowledges or sets of knowledges; rather, they are principles and connectors. They are sites of convenings. They are systems. IKS unite Indigenous peoples across the globe. Indigenous peoples are simultaneously tethered to place and migratory. We have always moved. Often the movement was tied to food or water. Sustenance. Or to mates. Another form of sustenance, I suppose. The movement allowed Indigenous peoples to trade ideas, peoples. Stuff. Migration enabled relationships between peoples and ideas. Sparked by connection and curiosity, movement spurred innovation. The movement was a particular life force. Those who fail to adapt and adjust perish. Those who do not innovate, perish. Early Indigenous peoples in what is now Alaska created kayaks for transportation in and through waterways. Kayaks were effective in narrow spaces. And fast ones. Kayaks helped move us. They provided fun. Trips toward sustenance.

We are located in place. In the movement was the return. To our place. Our origins. Place, as I understand it, is not the same as land. Place is land that has been imbued by and with meaning. Many of us introduce ourselves by situating ourselves in our current location and the places that birthed and nurtured us. And our relations. Our kin. We do so not by offering geographical coordinates, but by naming the land that has been given meaning by others. Place grounds us. Literally. And metaphorically. Indigenous peoples and our systems understand that movement and stability and ties to a specific place (or set of places) are not incommensurate. They are necessary.

Place, lands, and waters collide, intersect, cohere, and diverge. Place is not simply about terra firma, or the lands on which we walk or from which we emerge. It must include water. Water births us. It feeds us; sustains and cares for us. We emerge from it in some of our origin stories. Water has a convening function as well. It brings peoples together. Water is kinship. Love happens in and through water. So does life. *Mní wíchóni* (or Water is Life!) is not simply a slogan; it embodies the deep, rich histories, presents, and futures of how IKS connect peoples and places. Peoples and waters. Water is life. It gives. Provides. Sustains. Nourishes. It is place. And life.

IKS are philosophical and concrete. My intent here is to offer a brief overview of the ways systems—and their concomitant components—overlap and intersect. These are my ideas; they are how I think about IKS. Others will disagree. Philosophers will want to argue about how I have taken up their terms. Indigenous peoples will say, “Why are you using these words, dude?!” I’m offering you what I have.

Writing—and mine, in particular—is an imperfect medium to try to explain these systems. Writing isn’t always capable of explicating the interwoven parts of these systems. While I present these ideas in chunks, please understand that they are part of a whole. My intent here is to try to offer a primer; behind it is a mountain of research and millennia of experiences, processes, embodiments. Those cannot be broken down into lists or pieces of paper; they reside in bodies, places, waters. They are located in stories. Masked in trauma and unleashed through self-determination. They are as complex

as the daily existences of peoples. This disclaimer does not prevent my wanting to begin making lists so that I can be clearer about how I think about IKS. The clarification is a pebble in the river bed, surrounded by other pebbles as water flows across them.

There are at least five philosophical ideas that comprise IKS. They overlap and intersect. Epistemology is about our ways of knowing. We might ask: How do we come to know what we know? What is knowledge? Knowledge resides in our brains; we see it in nature. It is in books. And in other places. It is everywhere, really. Knowing is ubiquitous.

Ontology is how I think about our ways of being. We might ask: What is our reality? What are our realities? Or we might ask: How do we be? Or we might ask: What are the ways we are? Our realities, like our knowledges, are framed by the context; they shift. Move. Migrate. And they are located in place. For many Indigenous peoples, our realities are shaped by the ways that we come to know. Knowing and being are interconnected. Removing one from the others feels unbalanced; the removal creates silos that amputate the wholeness of knowing and being.

Third is pedagogy. Pedagogy is often thought of as how we teach or the process of teaching. But it is really about the processes and intersections between both teaching and learning. Teaching and learning are how we move knowledges between and amongst those who will continue traditions. We might ask: How do we think about the process of teaching and learning? And to what end? I understand that over the life course, individuals will learn and teach differently. Stories teach. So do places. And we learn in and through stories. And place. And by doing things. Teaching and learning, like the other terms used here, are ubiquitous. They are always in motion. They migrate over peoples' lifetimes. But also between peoples. And places. This issue is primarily about pedagogies, but it should be clear that teaching and learning are intimately connected to the other philosophical ideas and realities of Indigenous peoples. Richness resides in the intersections.

Axiology is rooted in aesthetics and larger questions of beauty. I have taken it up to articulate our ways of valuing and our value systems. I, and others, have written about this as concerning how we come to think of what is good, true, right, and beautiful. We might ask: What do we value? What is good, true, right, and beautiful? Values undergird everything within knowledge systems. They guide decisions and actions. Values influence our sensual experiences.

And, finally, there is the concept of cosmology. Traditionally rooted in astrophysics to define the origins of the universe, cosmology can be mysterious. And theoretical. Through an IKS lens, we focus on origins and, more specifically, on our origin stories. Origin stories inherently carry genealogical components in them. Genealogy locates peoples in relation to one another and to place. And waters. We might ask: What is the origin? Many Indigenous peoples may ask: Who are your people? Where are you from and to whom are you related? This is relational; it locates us and our origins. Kinship and genealogies. For Indigenous peoples, we emerge from the earth. Or the waters. The sky. Our ties to place are long and deep. Literally. And metaphorically. The temporal components of cosmology are important for the ways that we think about teaching and learning. What we value, teach, learn, and know travel across time. These philosophical ideas overlap, and they are shared amongst Indigenous peoples across the globe. And, as the ShamWow guy used to say, "But wait, there's more!"

The intersecting philosophies are held together by some additional observations regarding IKS. The philosophical pieces are important, because they demonstrate the complexities of thought processes, teaching and learning strategies, and the deep sets of values that drive knowledges and realities. The observations are a mechanism through which I want to help myself (and, ideally, others) understand the layers of our knowledge systems. The archaeology of them is deep. They deserve a patient exploration

beyond what they're receiving here. At some point, I will try to explore them, layer by layer. Or someone else may take that up.

IKS are *empirical*. They are rooted in observations, which happen over time—data are collected, analyzed, and used to inform decisions. These observations have traditionally been tied to survival and to community thriving. We observe to see where food lives. Where it travels. Or water. But we also pay attention to patterns tied to weather. Things that feed us. Sustain us. Or hurt or kill us. Indigenous peoples have always been scientists. The laboratories are places, waters, skies; the places where we live. Thrive. Struggle. Are born; and where we die. They aren't sterile; they are messy. Sometimes predictable and sometimes not. The laboratories have created knowledge that allows us to survive. Live. Continue.

These knowledges and the system that holds them are *sensual*. They are engaged through the senses. We see, feel, hear, smell things ... our knowledges are taken in through them. And they're multisensory. We often smell things before we see or feel them (e.g., rain or fire). Music engages us in every sense. In its very best iterations, music is transcendent. This is true of many things, and yet, other systems want to break the knowledge apart into component pieces and "grade" on those. How utterly tragic. Narrow. Stifling. Our senses work together, even when one or more of them is compromised.

IKS and its concomitant knowledges are *cumulative*. Knowledges cross generations. There are both spatial and temporal aspects to knowledges and the systems that hold them. What does it mean for me that I inherit the knowledges of my grandmother, who inherited her grandmother's knowledges, and so on? The accumulation and cumulative impact of knowledges are tied to our survival. And thriving. It is not multiplicative. It is *exponential*. IKS are *exponential*.

Humor is such an important part of these knowledge systems. I've only recently added humor to the list of traits of our systems that unite Indigenous peoples; we spend a lot of time laughing both at and with one another. We laugh at ourselves. Many of our nicknames are tied to moments where we were not at our best. Consider the story of the young man who unwittingly put diesel into the gasoline outboard motor and was then henceforth known as "Diesel" for the rest of his life. We reminisce about hard times (what commodity foods we ate growing up and how our mothers made do with nothing or the battered cars we sped around in or the tragedies unfolding in front of us). Weddings and funerals are places where we laugh long and loud. Surrounded by Pepsi (or Coke ... or Shasta) and blue jeans, these gatherings are loving and tragic. And we find humor in them. The irony, in some ways, is that Indigenous peoples are often framed as serious. Stoic. But we're goofballs, finding humor to manage the pain and trauma. And the humor points us to places of love and connection. Kinship.

The knowledges embedded in IKS are *connected to* and *located in place*. IKS are connected to waters. We learn from where we live. And travel. And where we—and others—die. Where we are born. This is kinship. Or one form of it. These knowledge systems are *lived* and *embodied*. They are not written down on the pages of books or articles. Or on sheets of music. They are lived. Played. Felt. IKS are *rooted in verbs*. Nouns matter, but they are often guided by verbs. IKS are four-dimensional; we live them through our bodies, and there is a spiritual element attached to them. In this way, IKS extend what we know through other lenses that place a primary emphasis on knowledge in a written form. And yet, many of us only want to engage knowledges as nouns. What might it mean to engage knowledges through a lens of living? Of the embodied?

IKS are *relational*. Between peoples, peoples and place, peoples and curriculum. If this is true, then they also carry an element of *responsibility*. If I recognize my relationship with you or a place, then I am necessarily responsible for it and its well-being. This isn't an obligation; it's a recognition and acceptance of our connectedness. This is, in part, what kinship is. And there are levels of

multigenerationality in it: I am responsible to my ancestors and responsible for my descendants. Some have framed this thinking as connected to the seven generations who preceded us and to the seven who are still to come. Relationality. Responsibility. Reciprocity.

I want to be clear that we could add other components to IKS, but these are the ones that I have found resonate globally. Indigenous peoples in Africa and Europe, along with those throughout the Pacific region of the world, will say, “Yeah, that works for us, too.” IKS is one knowledge system of many, although it is often hidden both because we—as Indigenous peoples—have not put them together in this form and because others have not taken the time to think seriously about knowledge systems and what they mean for the daily lives of peoples.

Not the end. A beginning.

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