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## Creating Third Spaces in K-12 Socio-Environmental Education Through Indigenous Languages: A Case Study

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**Creating Third Spaces in K-12 Socio-Environmental Education through Indigenous  
Languages: A Case Study**

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### **Abstract**

To foster meaningful environmental epistemic disobedience, children require curriculum/pedagogies that render settler colonialism visible while dialoguing across pluri-versal perspectives so they can recognize, and respond to, the social injustice of climate change impacts. We present a case study of a school in Northeastern United States that taught the Abenaki language and knowledge on traditional Abenaki land to non-indigenous students in a 4-5th grade classroom in the United States. Utilizing Mignolo's (2011) concepts of 'epistemic disobedience' through 'de-linking' and 'de-centering' to challenge structural/curricular settler colonialism, we found that the school must first be open to, and appreciative of, non-dominant epistemologies to set the stage for epistemic disobedience. We identified teaching the language of the Land, on the Land as de-coloniality as praxis. However, we also identified broader curricular epistemic frictions among the Science teacher and their pedagogies that attempted to epistemically re-center students thinking around the Standardized Account of science.

**Keywords:** decolonizing, Indigenous languages, socio-environmental justice, pluriverse, colonial matrix of power, science education

## Creating Third Spaces in K-12 Socio-Environmental Education through Indigenous Languages: A Case Study

The anthropogenic climate crisis was not caused by human nature, but, as Davis and Todd (2017) argue, “it is the result of a series of decisions that have their origins and revelations in colonization” (p. 763). To address the climate crisis, then, we must think beyond a socio-environmental justice approach that solely connects environmental degradation and social injustice (Misiaszek, 2020) to one that provides a pluri-verse of perspectives as well as de-links from modernity/coloniality (Quijano, 2000) to bring about epistemic change (Pashby et al., 2021). Changing our embedded colonized thinking about the climate crisis is not an easy task. To do so requires what Mignolo (2009) calls ‘epistemic disobedience’ which can occur through de-coloniality, “a set of creative processes leading to decolonial narratives legitimizing decolonial ways of doing and living” (p. 146).

Here, we focus on United States (U.S.) K-12 education as a possibility to bring theory to praxis, and highlight challenges and tensions of pluri-versal socio-environmental justice education that includes de-coloniality as praxis within a colonized classroom. We present a case study of a school that taught the Abenaki language and knowledge on traditional Abenaki land to non-indigenous students in a 4-5th grade classroom in the United States. Utilizing Mignolo’s (2011) concepts of ‘epistemic disobedience’ through ‘de-linking’ and ‘de-centering’ to challenge settler colonialism that occurs within the standardized content and structures of U.S K-12 schools, we focus our paper on the school, the language curriculum and pedagogy, and science curriculum. In particular, we follow Sund and Pashby’s (2020) focus on localized epistemic

disobedience within the larger context of epistemic obedience. Specifically, we examine the language teacher's pedagogy as a form of Land education (Calderón, 2014b) as decoloniality, and the epistemic frictions (Medina, 2013) that occur within a colonized school.

### **Epistemic Obedience: Universal Science Curriculum and the Western Perspective**

In U.S K-12 education, science is taught from the perspective of the Standard Account (for a review see Cobern & Loving, 2001), a Westernized approach that utilizes objectivity to promote universality and represents a colonized (i.e., universal) conception of science that is Western, white, male, modern, neutral, and secular (Medin & Bang, 2014). This “zero point” of neutral epistemic truth is a reference to the objective stance of science where “it is possible to achieve objectively valid knowledge about the physical and social world by merely using the appropriate method” (Castro-Gómez, 2001, p. 149). That is, science as an academic subject taught in K-12 schools is founded on the pillars of the colonial matrix of power (CMP, Quijano, 2000), which highlights that sexism, racism, patriarchy, authority, and settler colonialism are grounded in the dominance of a few white men who produced science. The knowledge production of science trickles down to K-12 education and authorizes what knowledge can be circulated and spoken of as truths and conversely what should be taken as culture. Most K-12 teachers in the United States teach through Standard epistemology (Cobern & Loving, 2001), and the curriculum and pedagogy are centered around the scientific method and gathering objective evidence to solve problems, including the climate crisis. Thus, to promote socio-environmental justice, pluri-versal perspectives, which denaturalize and work to ‘de-link’ science from the CMP, are necessary.

### **Socio-Environmental Justice, Pluri-versal Education and Settler Colonialism**

Socio-environmental justice explains how social conflicts, identities, and environmental degradation are connected, as destructive environmental actions are inherently political because they benefit some people while negatively affecting others (Malin & Ryder, 2018). In the field of U.S. K-12 education, we believe socio-environmental justice education requires that we not only situate ourselves to understand issues surrounding socio-environmental justice but also work towards epistemic change that includes (re)establishing individuals, communities, and knowledges who were/are harmed by socio-environmental injustices and settler colonialism. To achieve these aims, we must pedagogically engage students in de-coloniality so students/teachers can reconceptualize appropriate reparations without reproducing Westernized norms of how to live (Ideland & Malmberg, 2014; Pashby et al, 2020). That is, students must learn to question the structures of knowledge and expectations that support Standard Account's solutions for the climate crisis. The presented pluri-versal socio-environmental approach creates space for multiple and "de-distanced" personal perspectives, and recognizes different knowledges and experiences of global environmental issues (Mignolo & Walsh, 2018) will lead to different environmental solutions.

Complicating the issue of pluri-versal socio-environmental education in the U.S K-12 education is its environmental curricular framework, which is emblematic of settler colonialism. Educators are required to teach about environmental science, including climate change, from a standards-heavy, Westernized science orientation that focuses on geological processes of climate change and advocates for individualized actions (Clark et al., 2020). This orientation reinforces individualism rather than addressing wide-scale ideological changes that encompass political, social, and economic mobilization (Waldron et al., 2019), which are necessary for approaching pluri-versal socio-environmental justice in praxis and creating just futures (Bang et al, 2017).

Furthermore, standards-heavy science education in the U.S participates in, and is a reflection of, U.S. settler colonialism (Calderón, 2014a), as the displacement and elimination of indigenous knowledges from the curriculum mimics how (mostly) European settlers permanently moved into territories for economic gain, while displacing, dispossessing, and enslaving indigenous peoples (Wolfe, 2006).

Settler colonialism and its ecological domination not only, as Tuck and Yang (2012) note, created profound epistemic, ontological, and cosmological violence by disrupting indigenous relationships to land (p. 5), but it also, as Whyte (2018) highlights, created the environmental crises and its uneven/unbalanced impacts. Thus, teaching children about climate change through a colonized science curriculum only serves to reproduce and reinforce ecological domination and epistemic violence.

Instead, teachers must, according to Gaztambide--Fernández (2012),

play a central role in constructing the conditions for a different kind of encounter, an encounter that both opposes ongoing colonization and that seeks to heal the social, cultural, and spiritual ravages of colonial history...[and] abandon[s] the traditional logics of formal schooling that have defined educational projects over the last two centuries (p. 42).

To foster meaningful environmental and epistemic disobedience, children require curriculum and pedagogies that render settler colonialism visible while dialoguing across pluri-versal perspectives so they can recognize the social injustice and power disparities of climate change impacts.

To promote epistemic disobedience, we must recognize that our dominant Eurocentric educational system is *also* a *local* system, with particular cultures and history that reflect settler colonialism, and for that reason we must de-link from the normalization of settler colonialism within the CMP (Mignolo, 2011 p. 161). For de-linking to occur, both the limitations of the

curricular content and the logic of those knowledges must be brought to the fore. We suggest that this can occur by shifting knowledge and logic ‘geo-politically,’ that is, to another location.

Calderón and colleagues (2021) argue that the Indigenizing framework of Land education disrupts the ‘settler traditions of place’ (Seawright, 2014) both geo-politically and epistemologically and can render visible how settler colonialism (whiteness) “defines and limits what is knowable and what counts as knowledge in science curriculum” (p. 2). Calderón and others (see Bang et al., 201; Seawright, 2014; Simpson, 2014) suggest that land education “offers an opportunity to disrupt epistemicide...by recognizing Indigenous axiologies (values), ontologies (ways of being) and epistemologies (knowledges)... that are deeply connected with land, waters, and more-than-human relations” (p. 280).

In our case study, we were interested in the connection of Indigenous languages, knowledge, and the teaching of the language on the Land as a pedagogy of Land education, and its relation to ‘de-coloniality’ as a way to foster pluri-versal socio-environmental justice education that revitalizes language. We focus on language revitalization, rather than culture, as Hermes (2005) argues teaching through an Indigenous language supports cultural and language revitalization. We, too, believe that the approach of culture through language on the Land provides possible pluri-versal epistemologies, lays the groundwork for a ‘sustainable future,’ as well as challenges settler colonialism (Hermes et al., 2012).

### **Language Constrains and Promotes Pluri-versal Perspectives**

Language contains the roots of conceptual thinking and culture and society are defined and limited by language (Colucci-Grey et al., 2013). Language holds, in its grammar, different logics (epistemological orientations) through which the language holders are constrained to think (Bang et al., 2007). For example, Cary (1985) compared children’s thinking about humans and

their relations to animals in two populations living in rural Wisconsin: European-American children and children from the Indigenous Menominee Nation. European-American children were more likely to use reasoning that included ‘people are not animals,’ while the Menominee children used the opposite reasoning, ‘people are animals.’ This epistemological orientation is derived from the Menominee language, which organizes the world according to animacy<sup>1</sup>--thus equating humans and animals as equals; both are animate.

We are interested in whether teaching European-American students the language of the Land upon which they learn provides them with a grammar for thinking about human-non-human relations in biocentric ways (Bang, et al., 2007). Furthermore, we believe that situating the Indigenous language and cultural stories in the Land is a pedagogy of Land education, which is, itself, a de-colonizing framework (Calderón, 2014). Land education centers Indigenous concepts of place and requires us to “consider Indigenous agency and resistance tied to Indigenous cosmologies” (p. 27), as well as asks *both* student and teacher to rethink their relation to the Land as both an ecological, but also cultural project of rehabilitation (p. 33). That is, learning the language of the Land *on* the Land might allow students to reposition their experiences, question its knowledge structures, and gain insights into the culture of the language. Kostogriz (2002) argues that the combination of language and culture creates a “thirdspace pedagogy of literacy” and suggests that through integrating language and culture, students become aware of contradictions and ambivalences within this third space.

From our perspective as K-12 environmental science educators-turned-education researchers, teaching the language of the Land on the Land potentially provides a Land education pedagogy that supports de-coloniality by providing students a space in which they can anticipate

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<sup>1</sup> Animacy is not the only organizational feature of the Menominee language.

and engage with other worlds, a reimagining of education as a “pluri-verse in the making” (Silova, 2020, p. 147). More importantly, from the framework of pluri-versal socio-environmental justice, the teaching of the Indigenous language on the Land also has the potential to (a) restructure the students’ human-nonhuman positioning (Audley et al., 2020), (b) help students face historical injustices committed on the people of the land, as well as (c) work towards reparation through indigenous language revitalization in order to create just worlds.

### **Current Study**

We focus here on the Western Abenaki language. Like many Eastern Algonquian languages<sup>2</sup> (which includes Potawatomi, Ojibwe, and Menominee), the Western Abenaki language distinguishes between the animate/inanimate. Most living things (including hills with lush vegetation) are considered animate, but so are things that have spirit, like fire and stories. This animate and inanimate structure, among other aspects of the spoken language, situates a person in an equal relation with the more-than-human-world, constructing a biocentric relation between the speaker and the more-than-human-world.

In our case study, we are situated in the traditional Lands of the Western Abenaki tribe. The four bands of Western Abenaki (Elnu Tribe of the Abenaki, Nulhegan Band of the Coosuk Abenaki Nation, Abenaki Nation of Missisquoi, Koasek Traditional Band of the Koos Abenaki Nation) have lived continuously for up to 12,000 years on the land now called Vermont in Northeastern U.S. The State of Vermont, like many early colonizers, refused to recognize sovereignty of the four Abenaki bands and instead engaged in genocidal and ethnocidal attacks (Nulhegan Tribe Statement of Abenaki Ethnocide, 2021), going so far as to institute a state

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<sup>2</sup> Abenaki Tribal council member told us that Algonquian languages were derived from the Abenaki language, but that European settlers who were transliterating the language either did not know or did not care about the distinctions, “once you give that kind of nomenclature to something, it kind of defines it.”

eugenics program to coercively sterilize those who claimed Abenaki decent (see Gallagher, 1999). To survive, many Western Abenaki changed their names or did not claim Abenaki heritage during the early 20th century, which impacted the tribal nation's ability to seek state and federal recognition, and thus, land recognition.

Because Vermont failed to recognize the Western Abenaki bands, the tribal nation's customs, history, and epistemologies were not included in Vermont's K-12 public school curriculum. Even today, with Vermont officially recognizing the Western Abenaki, there is no mandate from the Vermont Agency of Education to teach about the Abenaki; districts can decide whether and how to teach it.

To envision a more just and sustainable future, the nuances and reality of systematically imposed oppression should be understood through praxis, rather than only theorized (Medina, 2013). In this study we are interested in extending 'epistemic disobedience' as theory into de-coloniality as praxis, and in particular (a) identify school practices that make epistemic disobedience a possibility within a colonized school, (b) examine whether teaching an Indigenous language on the Land can be considered de-coloniality as praxis, and (c) examine whether these approaches produce "productive epistemic friction" (Seawright, 2014, p. 557) when exposed to colonized multicultural science curriculum or re-center the CMP.

### **Methodology**

To address our research, we employed a case study approach (Stake, 1995), which allowed us to create an activity boundary that focused on teachers or administrators who were involved with, or came into pedagogical contact with, the teachers and learners of the Abenaki language. Although case studies often include observations, due to IRB and school COVID-19 restrictions, we were unable to observe classroom instruction. Instead, we relied on semi-

structured interviews as our primary data gathering method, which we carefully designed to provide adequate coverage for our research purposes, as well as artifacts related to teaching and curriculum, such as lesson plans, parent handbooks, school website, and school curriculum (Stake, 1995). In addition to interviewing Jordan and Annora, the Abenaki language teachers; the Lead 4-5th Teacher, who taught science and co-taught with Jordan; and the Head of the School, we also repeatedly interviewed an Abenaki tribal council member who helped us situate Abenaki language learning within the present-day Vermont Abenaki Tribal context and provided perspectives concerning indigenous events, beliefs, and practices about which our non-Abenaki participants spoke. To add perspective for indigenous language revitalization, we interviewed two Indigenous Algonquian language teachers and scholars whose work and scholarship focus on the teaching and revitalization of their languages (see supplemental Table 1 for participant description). Finally, to ensure trustworthiness, we triangulated teachers' interviews, lesson materials, and approaches to teaching the Abenaki language with books written by individuals who teach the Abenaki language to non-Abenaki students. All participant names are pseudonyms.

After each interview, we created field notes along with initial analysis through dialogue, carefully considering and challenging each other's researcher reflexivity, which we included as data in our analyses. We analyzed all data (interviews, fieldnotes, artifacts) following a constructivist grounded theory analytical approach (CGT see Charmaz, 2006), reflecting our belief that data is co-constructed and researcher reflexivity must be acknowledged when engaging in critical inquiry and social justice research. Reflexive of our own socialization in settler colonialism, we worked to navigate knowledge that was new or unfamiliar to us, grounding our analyses in our participants' sharing of worldviews. As both researchers identify

as non-indigenous and taught science in U.S. K-12 schools following a standardized curriculum, CGT allows us to consider our “methodological selfconsciousness” while interpreting and building theory upon participants’ experiences (Charmaz, 2020). We acknowledge each of us is just beginning to learn from Indigenous knowledge holders, and our understanding of what it means to live, learn, and teach an Indigenous language on Indigenous land is still ongoing. This study was approved by the Institutional Review Board of the first Author’s institution.

### **Abenaki Language Teaching and Learning Context**

Although UNESCO (2001) categorized the Western Abenaki language as extinct, a revitalization effort led by tribal members over the past decade has increased the accessibility of speaking and learning the language. There are still very few Abenaki language teachers, but to combat this, an Elder member of the Nullhegan band founded an Abenaki Language Summer immersion program, in which Jordan and Annora, the Red Barn teachers, participated. In addition, the Elder Abenaki Tribal member, as well as Jordan and Annora, led monthly in-person language classes, open to indigenous and non-indigenous language learners (see supplemental Table 2 for language resources). Jordan and Annora completed certification as Abenaki language teachers through an Indigenous Education Center, and were invited to teach, and subsequently taught, at the Summer Immersion program. In the fall of 2021, Jordan and Annora were given the title of Knowledge Holder, by the Abenaki Elder and his tribe, for their knowledge of, and continued participation in revitalizing the Abenaki language.

### **The Red Barn School: History and Context**

The Red Barn School is located outside a large city in the state of Vermont in the Northeastern U.S. Although the Red Barn School is an independent (non-public) school, it is “approved” by Vermont, which means teachers meet state licensure requirements and curriculum

reflects state standards, making it comparable to public schools in Vermont (U.S Department of Education, 2009). The student body and faculty is mostly white and economically middle class, reflecting the state's population. The school considers itself a social-justice-oriented school with a "nature-based program;" in addition to classroom learning, students spend curricular time gardening and learning science through nature interactions. The Red Barn School also offers traditional subjects (math, English, science, physical education) as well as a second language, political geography, and cultural history.

Although the school had established individual socio and environmental justice curricular elements, such as thinking about societal injustices and addressing climate change issues (e.g., Malin & Ryder, 2018), curriculum was not intentionally designed to offer pluri-versal hybrid spaces where multiple perspectives could engage in nuanced dialogues. For example, each marking period the school focused on separated science and a culture poster presentation, each focusing on an epistemological theme as the object of inquiry for student-driven individual and group research projects. While this "science fair"-like synthesis and the performance of posturing are common means to signal learning of science and social science as well as student agency in schools, the "tableau" of demarcated knowledge reinforces settler colonialism by only *presenting* other perspectives, not engaging in them. Including multiple perspectives does not necessarily actualize de-centering the Standard Account, as it is how these worldviews are included and responded to by learners/teachers that is key.

The school first attempted to curricularly integrate social justice and science perspectives by hiring Jordan to create a school garden that reflected a social justice perspective. As the school was located on Abenaki Indigenous land, Jordan and the administration agreed, after deliberation, that the first garden should be an Abenaki Seven Sisters Garden. Jordan developed

the garden in consultation with Abenaki community members, meeting several times over the course of the year, and as they continued their collaboration, Jordan began participating in open Abenaki community events, including participating in community Abenaki language classes with another Red Barn teacher, Annora.

The initial purpose of Jordan and Annora's immersion in the language was not to *teach* the language but to *learn* the language. However, due to Vermont Educational COVID-19 restrictions on teacher circulation among multiple classrooms, a second language could no longer be offered. At this point, Jordan was the assistant teacher in the 4-5th grade classroom, and Annora suggested that Jordan teach Abenaki to the 4-5th graders in their class so some children at the school could engage in a second language despite the Covid restrictions. She noted

And I think they were talking about, what should we do about languages? And I said, 'Well, what about Abenaki?' And the Head of School [was like] 'Oh, yeah, Jordan knows how to teach, and wants to teach. Let's just do it.'

Thus, in the 2020-2021 school year, Jordan taught Abenaki as the second language to the mixed grade classroom of 4th-5th graders, which was composed of 20 children, aged 9-12.

### **Findings**

Jordan's curriculum and pedagogical practices of specifically teaching the Abenaki language on and recognizing the Land as Abenaki created a place informed by Indigenous knowledge, rendering settler colonialism visible (Calderon, 2014a), as well as presenting a new "geo-epistemology" (Canaporo, 2009) that recognized the entwinement of Abenaki language, culture, and knowledge of that particular Land. Yet, because the class was situated within the very epistemic framework it wished to de-link from, the teacher (and the students) encountered epistemic frictions (Medina, 2013) when they encountered a multicultural standardized science content which presented Indigenous knowledges solely as 'culture.'

We present three findings that allow us to consider de-coloniality as praxis within a colonized space. First, the school offered curricular space to diverse perspectives, which were recognized, appreciated, and acknowledged as epistemologies, which we refer to as “loosening the bonds of epistemic obedience.” Second, Jordan continually engaged with the Abenaki community and created curriculum and pedagogy in conjunction with that community, resulting in Jordan’s teaching the language of the Land on the Land as de-coloniality praxis, reflective of a Land education framework which is rooted in de-colonialism. Finally, we discuss curricular epistemic frictions that occurred between the Land education, employed by Jordan, and the Lead Teacher’s multicultural science approach, which served to re-center the Standard Account of science.

### **School Practices that Loosen the Bonds of Epistemic Obedience**

Loosening the bonds of epistemic obedience must, at minimum, include cultural appreciation--giving knowledges, cultural expressions, or artifacts status of equality, credibility, and value and considering them holistically without stripping them of the context through which one should understand them (Morgan, 2003). This affords non-colonial epistemologies a ‘space’ within the curriculum, but the space is not necessarily de-linked. In our study, *constructing cultural appreciation* included two actions: (1) working with Abenaki tribal members to create a garden that was culturally appreciative and (2) valuing the Abenaki tribe by offering space for Abenaki language learning community elders and others.

For Jordan and the Red Barn School members, creating an intentional “six sisters garden” was more than choosing and planting crops. In taking a culturally appreciative approach, Jordan sought and interviewed (often with students) diverse members and scholars of the Abenaki

community and received direct instruction by Abenaki community members on how to create a garden and garden ceremony that was not appropriative<sup>3</sup>. As Jordan recounted

And we asked [Abenaki Tribal members], would it be okay to do this [gardening ceremony]? And so, we decided that it would be best for us to write our own song, as opposed to singing a different [traditional Abenaki] song. And so we wrote the song, based on the things that we had learned from Abenaki. [The song] said stuff, like, plants, remember, they teach us to work together, we belong, they belong with us and us with them. It's called Grow Little Babies Grow, Grow, Grow. It was all written by the kindergarten-first grade class.

Cultural appreciation was meaningfully fostered by seeking the counsel and consent of diverse Abenaki community members who held a variety of perspectives in the creations or use of knowledge, expressions, and artifacts related to the garden (Morgan, 2003). Furthermore, in connecting the garden with the ceremony, the Red Barn School was not fully stripping the garden from its cultural context but instead highlighting the connection, accounting to a history of settler colonialism and epistemic violence.

The creation of the garden also led to another epistemic bond loosening, as it was after the creation of the garden that the Red Barn School officially recognized that their school was on Abenaki tribal land. With the recognition came the desire to “give back,” which manifested by offering the school as a site for Abenaki language lessons for the broader community. As the Head of School explained about the reasons for the decision

... owing gratitude to those who came before us. And I don't think we didn't know that before. But I think just the more we did, the more it became clear that we wanted to do this in a way that wasn't just pure cultural appropriation, but was trying to give back and trying to appreciate what came before us. So, I'd say that garden was sort of the launching point. And the connections made with strong connections made with members of the community. And then [Abenaki Tribal Member] was looking for a place to teach Abenaki language. And Jordan, Annora said, “Can we offer the building, and we always

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<sup>3</sup> The approach the school took to creating the garden was reflective of the school's approach towards its “social justice cultural themes.” For example, during the Kwanzaa unit, the school brought local arts organizations associated with African American Vermonters so that the white faculty and mostly white student body were not just “standing up on a perch and looking in from the outside,” which is still emblematic of settler colonialism.

offer the building to nonprofits and other community members.” And we said, “Sure,” so he’s been using our site in our building to host monthly language classes here...

The “offering of space” for the language class, however, was not an intentional restorative justice approach; the school did not intend to make amends for historical injustices. The school focused on gratitude towards the Abenaki tribe, rather than contending with what came before or seeking to make amends. Nevertheless, the “offer” recognized the school's relationship with the Abenaki and supported the tribe’s language revitalization, a first step in thinking among diverse perspectives (Ideland & Malmberg, 2014). We consider these two actions as loosening the epistemic bonds, rather than de-coloniality as praxis, as both of these initial activities were emblematic of settler colonialism in their relation both to knowledge and land, and both were necessary as they built on each other.

As Seawright (2014) notes,

critical epistemic shifts can move conceptions of place beyond simplistic visions of geography and flattened understandings of the land or the environment to a point where the soil, streams, and multitudes of beings engaged in complex relationships can be seen on their own terms outside of economic utility (p. 556).

However, no ‘critical epistemic shift’ occurred. The garden was created as a component of nature-based learning, which supports the schools overarching mission; the garden had economic utility in how it was used and inscribed within the curriculum. Besides rendering the land itself as economic utility, at the heart of the ‘offering space’ is the legitimation of settler land acquisition and the physical and ideological dispossession of Indigenous inhabitants (Coloma, 2013).

It is not surprising that actions within a colonized school system reflect coloniality; yet the work that the school itself took towards loosening the bonds of epistemic obedience, with and through diverse perspectives, is uncommon and still emergent. The investment and sustaining of

the Indigenous language program in consultation with the people Indigenous to the Land occupied by the school offers a pathway for academic programs across this colonized land to reconcile embedded curricula, cultural imperialism, and ongoing settler colonialism.

### **Creation and Implementation of Abenaki Language Curriculum**

Jordan and Annora's continued participation in Abenaki language and cultural events, specifically related to the teaching and learning of the language, and dedication to teaching the language in its cultural context (i.e., dedication to the foregrounding its oral tradition and the inclusion of traditional stories) continued the active connection between the school and the Abenaki language community. It was through this on-going relationship that Jordan began the process of de-centering and de-linking from the CMP. For example, Jordan created a speaking picture-based dictionary in consultation with an Abenaki Language Elder, thus creating parts of the curriculum with community input

I've been actually creating a dictionary that's all pictures, and then taking from what we practice in the adult class... and then taking the recordings of native speakers and putting them into the picture dictionary. And then I shared this with the whole speaking community, and they're like, "I think I'm gonna be able to use it" for other kids that they're working with.

Here, the creation of the dictionary highlighted that Jordan was able to work with the community to create an artifact that reflected Abenaki epistemologies and the community recognized it as such and used it to help revitalize the language within their own Indigenous communities. This is noteworthy as teachers themselves must be de-centered from the CMP to be able to create pluriversal pedagogical spaces for students to encounter within the Land Education framework (Lees et al., 2021). Moreover, the language revitalization focus was also present in the method that Jordan used to teach their students, which was the traditional Indigenous learning model

[W]ith the kids, I've been doing it [teaching the language] fully orally, which has kind of been a challenge, because that's not how I'm being taught. I've never done anything fully

orally, but I felt like [I need to teach it that way] because traditionally, it's a fully oral language.

This model also included reading and listening to Abenaki narratives as they are critical to understanding Abenaki culture

[O]ne thing that's been said to me a lot, is that stories are really important; our history is in our stories. And so I knew that coming into this, it'd be really important to be reading them traditional stories because I can't tell them the way that they should be told.

Jordan recognized that they could not tell the stories in the way that they were traditionally told, yet the Abenaki Language Elder communicated how important it was that the stories were told on the Land. Rather than re-colonize the stories by reading them aloud themselves, Jordan instead, had the students listen to stories audio-recorded by Abenaki Elders, on the Land, which allowed the students to value the language, and its place in nature holistically, on its own terms. That is, rather than teaching decontextualized words in the classroom, Jordan acknowledged how history is embedded in language and stories and how language and the stories were embedded in the Land and Land relations, a pluri-versal approach that reflects a perspective of de-coloniality.

The Abenaki language classroom, the Land, provided the model for Jordan's pedagogy. This *'feeling the land'* became an essential component of the language curriculum. Jordan acknowledged the importance of teaching the Abenaki language *on* Abenaki Land, "I felt like because we were like a nature-based school, and that nature isn't this sort of neutral term, but we're on Abenaki territory that I thought, excuse me, that a really good place to start." This statement acknowledges that Jordan sees the Land as political, and was able to identify the grammars of settler colonialism (Calderón, 2014), a sign of de-centering. For Jordan, in particular, teaching Abenaki at the Red Barn School began with the question, "Who belongs to the land we are on?" (p. 1036), which provided the students with an opportunity to re-consider the land as something that they were in relation with, rather than just on (Blenkinsop & Fettes,

2020). Jordan's Land acknowledgment, in conjunction with the pedagogical approach of 'reading' aloud Abenaki creation stories in the woods on Fridays, allowed the students to engage with more than just the language. As Styres (2019) notes

Indigenous narratives call into question relations of power and privilege that inform dominant representations and legitimization of truth and notions of authenticity. Indigenous narratives can open opportunities for engaging with learning through the process of inquiry and critical self-reflection (p. 35).

Thus, by combining language learning on the Land with language Discourses from stories (Gee, 2015) a *pedagogical third space could emerge*. In this pedagogical space, students had potential to center their relations with the Land, scaffolded by the Abenaki language and its grammar, while holding the dominant representations of truth presented in the stories in dialogue with their own beliefs and knowledges. Jordan's pedagogical approach reflected the approach of the Abenaki Language Elder, where attentiveness, valuing the Land, and teaching Abenaki orally with cultural stories drove the curricular design. However, Jordan's approach was in *friction* with the school's general approach; the school itself did not have a public Land acknowledgment statement, used the land to *teach about nature* rather than *in relation to nature*, and used cultural stories as comparison points, a place-based multicultural pedagogical approach (Ferkeny & White, 2013). According to the Lead [Science] Teacher,

You're introducing them to learning a language and also very much teaching them a culture. So, the comparisons and connections over culture do come up a lot, whenever we're talking about our traditions, or some or different cultures' traditions, they will definitely bring it up if there's some sort of connection, or even contrast... So like, they definitely are retaining a lot of those elements of culture, and then bringing them back into conversations, without necessarily our [the teachers] having to be like, 'Okay, now let's compare this to Abenaki.'

In the example above, the students are the ones driving the dialogic integration, spontaneously making connections and asking questions across content, which highlights a possible pluri-versal perspective. However, while the Lead Teacher recognized the students'

willingness to engage in pluri-versal dialogues, she herself did not engage in them; rather, she worked to re-center the students' thinking on/toward science knowledge produced from the CMP. From our conversations with her on her pedagogical training, we suggest that frictions between pluri-versal perspectives and the Lead Teacher's approach to multicultural science and Westernized social justice curriculum stem from the development of value systems inculcated in colonized elementary classrooms up through graduate level science education coursework.

### **Pedagogical Epistemic Frictions**

The pedagogical epistemic frictions occurred mainly between Jordan's Land education approach and the school's science and social justice curriculum, which focused on *amplifying many voices* and *reading culture through a Western lens*. As the Lead Teacher noted her goals for the social justice curriculum

I think that my goal for students is to really understand that the world is made of many different peoples. And, and that our responsibility is not just to take care of ourselves, but the world community, and so we need to hear all of those voices and then help all of those voices be heard...I think it's married with that social justice piece for me and I think that my students are starting to get that.

In this example, the curricular focus is not coordinating voices, a pluri-versal dialogue (Kramsch & Uryu, 2020). Rather, the Lead Teacher approaches social justice from a Western colonized approach by focusing on helping students *hear* these voices, and subsequently *help to amplify* those voices, without having the children ask “how do those voices relate to what I know” and “do those voices ask me to change my thinking” (North, 2006).

Aspects of the CMP were also reflected in the pedagogical approaches to science curriculum, in how culture was presented and used (as a story) and how it was compared within the curriculum (by comparing the ‘cultural story’ with a scientific explanation). That is, the Lead Teacher’s guiding questions for analyzing Indigenous stories and cultural history served to

undermine their veracity in the face of her students, with the subtext being that science, as derived from Eurocentric to Standard Account lineage, is objective and neutral, and thus superior. As the Lead Teacher told us about her science lessons that integrated cultural themes

[The] intro to the lesson would be talking about ‘What is culture? What are the elements of culture? And why do we have culture?’ And then talking about ‘What is the folktale? How is it different than other stories?’ And then we would read a folktale... And then, after reading it, reviewing, so ‘What is the story telling us? What's its message?’ And then bringing them through questioning, being like, ‘Well, what do you know about weather? Okay, so why would they explain it in this way? How does that help them understand?’

This comparative epistemological scientific approach supports perspective-taking, but does not hold a pedagogical third space that is needed for epistemological dialogues. Rather the comparative pedagogical approach dismantles it, as it reinforces the primacy of Standard Account of science (Cobern & Loving, 2001). That is, the teacher is actively working to re-center the students’ thinking within the colonized epistemological approaches to science. For example, the Lead Teacher told us how she incorporated different cultural epistemologies into her science curriculum

...[A] lesson, say where you'd be looking at the difference between the science and a story. When we studied Pacific Islands, we read a lot of Hawaiian and Polynesian folktales. And in those stories, the volcanoes are spirits and talking about... well, that brings some sort of meaning to these random eruptions that we know are from, you know, the mantle is heating up ...

By comparing science “with a story,” even one with a meaningful explanation, the teacher reinforced the importance of the Western scientific explanation, one that uses an objective methodology. In this case, the students were discouraged from entering a dialogical space, but instead, were asked to re-center their thinking within the Western epistemology and Standard Account.

In sum, we found that cultural appreciation helped lay the groundwork for pluri-versal approaches within the colonized school by acknowledging non-Westernized knowledges towards which students could gravitate. The inclusion of the Abenaki language, by a teacher who was in the process of de-centering from the CMP, and the Land education framework as de-coloniality, created a pedagogical third space, during which the epistemological de-centering could occur. However, the Lead Teacher's pedagogy reinforced science as objective, rational, and cultureless, and accordingly engaged in re-centering epistemological obedience. Overall, we found that within the colonized school system, epistemological bonds were loosened, de-centered, and re-centered through different pedagogical practices. As Sund and Pashby (2021) note, schools must both “reorient and re-curricularize knowledge processes” (p. 165) in order to de-link. We found that in cases where there was epistemic friction, de-coloniality as pedagogical praxis was stifled.

### **Implications**

First, we consider the ways in which our empirical study speaks to how theoretical considerations *align* with, or are *in friction* with turning theory into praxis. Then, we suggest implications for enacting de-colonizing practices in primary schools, including possibilities and challenges for teaching and learning in the United States.

In our case study, we found that the Indigenous language in combination with Land Education and a teacher that was working towards de-centering, provided a potential scaffold for a pluri-versal perspective, along with an opportunity for students to de-center their understanding of nature as dichotomous, a settler colonial perspective, and instead see nature as relational. This third space afforded the awareness and potential of creating epistemic disobedience in relation to students' epistemologies of environmental science.

Although epistemological frictions existed across the curriculum in the Red Barn School, we believe that these epistemic frictions exist within school systems, as schools within the U.S. were created as sites of assimilation into settler colonialism, and purposed to erase alternative cosmologies, epistemologies, and language systems--and thus relations of peoples to land. Hence, for de-coloniality to occur within a school, the teachers first must de-colonize their own thinking before they can engage with de-coloniality as praxis. As Lees et al. (2020) notes about the precursors of Land education, “[this] approach demands confronting ongoing colonialism” (p. 280) and “demands intense axiological, ontological and epistemological work” (p. 281). Although it may seem burdensome for us to ask teachers to take-it upon themselves to work towards decentering from the CMP, which includes de-colonizing self-work as well as building community ties, these are necessary activities if teachers want to work towards the epistemic shifts that are necessary to pedagogically engage students in de-coloniality, especially with regards to Indigenous curriculum.

We see this teacher work as necessary, as children are positioned in a learning setting to either encounter pluri-versal perspectives and learn dialogue across these multiple worldviews, or to become re-grounded in coloniality. As Nxumalo (2018) reminds us, disrupting CMP narratives during early schooling provides a strong foundation for more pluri-versal and critical stances towards a just and environmentally sustainable world.

We call on schools, as well, to take firm steps towards reconciliation with tribal communities and to work with teachers to de-center their entire curriculum from the CMP. Otherwise, existing curricular and pedagogical frictions that stem from Westernized social justice and multicultural perspectives may inhibit and undermine the germination of pluri-versal pedagogical approaches and understandings. This de-colonizing work should be done carefully

and in consultation with communities who are willing and who are already engaged with this work. We acknowledge that this may not always be possible, and that Indigenous communities may not want to partner with schools or states as there are also tensions within indigenous communities, and indeed, within Abenaki tribal bands, about *who* should know and think through their language, and therefore, perspectives.

This is a particular tension that is not given much thought in the theoretical literature on de-colonizing as praxis. That is, epistemic disobedience requires other perspectives, but what if others do not want to share their perspectives with their colonizers? In practice, who decides whether or not a particular perspective is shared, especially if after a perspective is shared, it will be available to students' families and non-indigenous community members who might re-ground or re-colonize this knowledge. Who can ensure what happens outside of a school community? This tension is important because partnerships, especially those built around disciplinary or curricular needs, are often at risk for re-colonization.

Although our work provides early evidence for de-coloniality as praxis, our study only examined whether a teacher could create a third space where children could engage in dialogue across a pluri-versal of perspectives, not whether de-centering occurred within individual children. Future research should also continue in this vein. As Zembylas (2017) reminds us, we need a 'dialogic of perspectives,' not a hierarchy of perspectives that reinforce or privilege a Westernized perspective. In order to do this, as Grande (2004) notes, we must critically examine [the traditional school curricula] and its relationship to power, re-centering knowledge in the "intellectual histories of the indigenous peoples" (p. 172).

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Table 1. Participant Information

<b>Pseudonym</b>	<b>Role</b>	<b>Background and Scope of Work</b>
Annora	Preschool Co-Director and Teacher, Red Barn School	Former dance teacher, member of outdoor/nature-oriented theatre and dance company; teaches preschool class Abenaki language and integrates song and movement into lessons
Head of School	Director of Red Barn School	Former teacher in an independent school in a large city in the Northeast of the US before moving to Vermont; founder of an unaffiliated girls' STEM afterschool program; entered Red Barn School as a parent, then on Board of Directors, and became Head of School in 2011
Lead Teacher	Lead Teacher of upper elementary (flex/ multigrade) classroom, Red Barn School	Former Outdoor Educator, teaching philosophy is aligned with the Red Barn's thematic curriculum; utilizes the farm and forests on and adjacent to campus for teaching ELA, history, and science; holds a M.Ed in Teaching Science
Jordan	Abenaki Language Teacher in elementary classroom, 4-6 <sup>th</sup> grade co-teacher, Red Barn School	Former AmeriCorps fellow; started in an auxiliary position was charged with establishing garden, and through researching and preparation, embarked on a study of Abenaki ways of growing and knowing plants and of Abenaki language
Potawatomi Scholar and Educator	Director of Potawatomi language program (not affiliated with Red Barn School)	Elder; oversees the teaching of Potawatomi language in a cultural center and preschool program; manages multimedia adaptations and creation of diverse language learning materials; former Potawatomi language teacher
Ojibwe Scholar and Educator	Ojibwe Scholar and Language Teacher (not affiliated with Red Barn School)	Professor of language and culture; Ojibwe Elder; consultant on curriculum development and assessment for school district serving Ojibwe student body
Abenaki Tribal council member	Tribal Council Member of an Abenaki band (not affiliated with Red Barn School)	Knowledge keeper; former assistant to previous Chief; member of an Abenaki, education-oriented non-profit; has a history of environmental activism; former history teacher

*Table 2. Teaching Western Abenaki On-line Language Resources*

<b>Type of Resource</b>	<b>Resources Description</b>	<b>Resources Link</b>
Youtube Channel, The Western Abenaki Language	Videos of Abeanki stories, songs, and vocabulary lessons	<a href="https://www.youtube.com/user/westernabenaki?app=desktop">https://www.youtube.com/user/westernabenaki?app=desktop</a>
website	Includes links to a dictionary, pronuncian, WAR (Western Abenaki Radio ) RAdio show, and link to language gatherings , and full stories from memrise lessons	<a href="http://westernabenaki.com/">http://westernabenaki.com/</a>
Ndakinna Education Center	Online language learning classes, storytelling events, etc.	<a href="https://www.ndakinnacenter.org">https://www.ndakinnacenter.org</a>
Western Abenaki Facebook Group	A space for language learners to ask questions and share information.	<a href="https://www.facebook.com/groups/178297314494">https://www.facebook.com/groups/178297314494</a>
The Abenaki Arts and Education Center	A place where Abenaki scholars, educators, and culture bearers share vetted resources to be used in K-12 education.	<a href="https://abenaki-edu.org/resources">https://abenaki-edu.org/resources</a>

