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Responsibilities to Decolonize Environmental Education: A Co-Learning Journey for Graduate Students and Instructors

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Abstract: We share our collective stories as instructors and graduate students with an interest in decolonial education on how we learned together in a course on Indigenous knowledge systems (IKS). The course occurred in the environmental studies department at a predominantly White graduate school in the Connecticut river basin in the area now known as the USA. The topic of IKS is steadily gaining interest in the environmental education (EE) field, as evidenced by an increase (albeit small) in the number of publications in peer-reviewed journals. At the same time, decolonial educators are looking for ways to teach IKS in an ethical and respectful manner. Our goal for this paper was to share how we grappled with questions around ethics and cultural appropriation. For instance, as decolonial educators who are not Indigenous to communities where we work and reside, can we facilitate lessons on IKS? If so, how can we do it in a manner that honors IKS and knowledge holders, is ethical, respectful and not appropriating? We learned that applying decolonization factors was crucial. Specifically, our work revealed four key decolonization factors: centering programs in Indigenous philosophies of education, privileging Indigenous voices and engaging Elders as experts, promoting Etuptmumk/two-eyed seeing, and employing Indigenous ways of teaching and learning. This paper makes contributions to the environmental education field, particularly decolonial educators who are seeking respectful and ethical ways to engage with Indigenous knowledge systems.

Keywords: Indigenous knowledge; decolonization; environmental education; two-eyed seeing; third space; Sankofa; Umunthu

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1. Introduction

The interest in Indigenous knowledge systems (IKS) in the environmental education (EE; we follow the UNESCO Tbilisi [1] definition of environmental education: a "learning process that increases people's knowledge and awareness about the environment and its associated challenges, develops the necessary skills and expertise to address the challenges, and fosters attitudes, motivations, and commitments to make informed decisions and take responsible action") field continues to grow. While the number of publications is on the rise (e.g., [2–16]), decolonial educators are looking for ways to teach IKS in an ethical and respectful manner. Our course on IKS focused on the interface between Euro-American knowledge systems and IKS. Recognizing that IKS are not regarded as valid and valuable in their own right (e.g., [11–19]), the course was upfront with privileging Indigenous ways of knowing and being. Additionally, there was a deliberate attempt to embody Indigenous worldviews, such as relationality, i.e., conceptualizing knowledge as holistic, cyclic and dependent upon relationships and connections to living and non-living beings and entities. Within this worldview, people are part of the environment; engage in multiple ways of knowing, including through spirituality; and view the land as sacred [11,13,19–23]. Thus, participants were encouraged to go beyond print-based formats traditionally preferred in Euro-American-based academia for their projects to consider additional formats that

were not only meaningful to them but aligned with Indigenous worldviews. The idea of relationality including people as part of the environment is a longstanding Indigenous worldview (e.g., [21,22]), although it has lately emerged in the Eurocentric philosophy of posthumanism, which argues that the more-than-human beings (animals, plants and the non-human elements of the natural world) have power and agency [24] and calls for interconnections [25]. Details on the course aims and content are described in Section 3 of the paper.

We journeyed together tackling difficult ethical questions around cultural appropriation. What we found helpful was the application of decolonization factors; in particular, the course embodied centering programs in Indigenous philosophies of education, privileging Indigenous voices, engaging Elders as experts, promoting Etuaptmumk/two-eyed seeing, and employing Indigenous ways of teaching and learning. We acknowledge that decolonial EE is a life-long journey, not a destination, and that we should not aim for perfectionism since this notion is rooted in White supremacy [26]. We will make mistakes on this journey, but we need to learn from those mistakes and keep going. In this paper, we use an autoethnographic framing to share our reflections on the course. We start with a review of literature on decolonizing EE, followed by a description of how we learned together, themes from participants' reflections, discussion and conclusion.

2. Decolonizing Environmental Education from Indigenous Perspectives: What Is Known?

As noted in the introduction, the number of publications on the topic of IKS in the EE field continues to be on the rise across the globe. The Nishnaabeg scholar Simpson [11] argued for grounding Indigenous EE programs within IKS because it strengthens cultures; promotes environmental protection, including sustainable local economies; and supports students "through healing and decolonizing processes" [11] (p. 16). Many Indigenous scholars are proponents of decolonizing education in general, and Indigenous EE programs in particular. They address key factors of the decolonization process: centering programs in Indigenous philosophies of education, revitalizing Indigenous languages, engaging Elders as experts, privileging Indigenous voices, employing Indigenous ways of teaching and learning, creating space for resistance; connecting to the land, having Indigenous education controlled by Indigenous communities and promoting two-eyed seeing [2–21,27,28]. These scholars emphasized the importance of content, as well as process. For instance, Cajete [21], Graveline [29] and Simpson [30] stated that incorporating Indigenous ways of teaching and learning, such as learning-by-doing, observing, storytelling, creating, reflecting, ceremonies, dreams, visions, and fasting, provides opportunities for students to share and learn in a culturally inherent manner and also supports the idea that Indigenous knowledge is not only content but also a process.

Many of the decolonizing factors were apparent in Conrad et al.'s research [31]. In their four-year study to foster the success of young Indigenous students, the authors found that ethical relationships guided by the Cree wisdom teachings of wîcihitowin (life-giving energy) and wahkohtowin (kinship relations, which include the more than human) among Elders, the research team and students throughout the study were fundamental for decolonizing practices to emerge. Such practices included integrating Cree language into lessons; incorporating land-based activities, ceremony and storytelling; remaining open and intuitive; letting go of power and control; and creating a welcoming space. Similarly, Ragoonaden & Mueller [32] incorporated Indigenous traditions of teaching and learning in an introductory university course and found that students appreciated the peer mentoring, circles of learning and relationship with instructors. Indeed, engaging students in Indigenous pedagogies opens the opportunity for students to understand that transformation can take the form of disrupting dominant discourses, which is a key strategy for decolonizing education [33].

An example of connecting with the land is illustrated in Simpson's work [13] in which she advocates for land as pedagogy by using Nishnaabeg stories as a process and context

for Nishnaabeg intelligence. She starts with the Nishnaabeg maple sugar origin story she learned from an Elder. The story illustrates the basic foundational Nishnaabeg values of "love, compassion and understanding", which were missing in Simpson's education experiences from kindergarten through to graduate school [13] (p. 6). Nishnaabeg intelligence encompasses embodiment and conceptual thought—one learns "*from* the land and *with* the land" [13] (p. 6), emphasis in original). Nishnaabeg ancestors were practitioners of Nishnaabeg intelligence:

> Our ancestors' primary concern in "educating" our young people was to nurture a new generation of Elders—of land based intellectuals, philosophers, theorists, medicine people, and historians who embodied Nishnaabeg intelligence in whatever time they were living in because they had lived their lives through Nishnaabeg intelligence. [13] (p. 13)

Indeed, land-based education uses an Indigenized and environmentally focused approach to education by recognizing the physical, mental, cultural, social and spiritual connection to the land [6,34–38]. It is a possible solution to addressing the impacts of climate change, particularly on children and youth [39]; improving the lives of Indigenous youth by helping to create connections to land and developing resilience and wellbeing [40]; and directly challenges settler colonialism because its goal is to sustain Indigenous life and knowledge [41].

Mi'kmaq Elder Albert Marshall developed the concept of *Etuaptmumk* "Two-eyed seeing", which means learning "to see from one eye with the strengths of Indigenous ways of knowing, and to see from the other eye with the strengths of Western ways of knowing, and to use both of these eyes together" [27] (p. 335). Two-eyed seeing is illustrated in a multi-year community-based participatory research project initiated by the women of the Pictou Landing Native Women's Group (PLNWG) in Nova Scotia, who were concerned about the health impacts of dumping effluent from the pulp and paper mill's operations into their waterways. This approach made room for Indigenous ways of knowing (e.g., oral histories, sharing circles, documentary film-making) to work in tandem with Western ways of knowing (e.g., conducting a variety of monitoring techniques—water, air, soil, and sediment sampling and analysis). The result was a broader assessment of health concerns and informed a holistic understanding of individual and collective health in Pictou Landing First Nation. For this research, "two-Eyed Seeing has been central to the project as the PLNWG and their university partners have sought to conduct relevant, respectful, responsible, and reciprocal research" [42] (p. 8). As of 2020, the mill was shut down [43].

Another example is Bartlett's work [44]. She posits that Western sciences focus on matter and energy and promote object-oriented minds; on the other hand, at the heart of Indigenous sciences is consciousness. According to Bartlett, learning to attribute consciousness to natural objects has the potential to change students' attitudes toward nature by nurturing respect and reverence. She describes an exercise on solstices and equinoxes that uses the "Two-eyed seeing" concept. The exercise teaches the Western science concepts on the seasons and Indigenous ways of knowing. In particular, learners are encouraged to shift their consciousness to animate the Sun to become "Grandfather Sun which enables him to see Mother Earth."

We join the conversation on ethically and respectfully teaching and learning Indigenous knowledge systems. In particular, our work responds to an area of research Lowan-Trudeau [6] identified as needing further exploration, which is the role of non-Indigenous people in Indigenous EE and how to engage with and share Indigenous knowledge in a respectful manner.

3. How We Learned Together

3.1. Course Description

As mentioned in the introduction, the course was offered on zoom in the spring of 2021 and focused on the interface between Euro-American knowledge systems and Indige-

nous knowledge systems (IKS). It was designed for students interested in learning about cross-cultural theories of knowledge and practice and serving in cross-cultural contexts in areas such as education, conservation and environmental sustainability. The learning outcomes included the following: explore the ways in which Indigenous knowledge systems have been adapted to meet contemporary imperatives by Indigenous peoples around the world; begin to see Indigenous epistemologies and ontologies as unique bodies of knowledge; understand the living and open-ended nature of Indigenous knowledge systems; understand the rights of Indigenous peoples to their knowledge and heritage; understand Indigenous peoples' resilience, resurgence and revitalization; gain an appreciation for Indigenous and decolonizing research in conservation and education; and consider the ethical dimensions of working with Indigenous peoples surrounding intellectual property rights and appropriation.

Topics included IKS and worldviews; land-based pedagogies; knowledge and cultural appropriation; Indigenous and decolonizing research methodologies; and resilience, resurgence and revitalization. The last topic was informed by Simpson's call [10] encouraging students and instructors:

> "to think about how our Ancestors have resisted the processes of colonization, colonialism, and assimilation in the past. This injects the learning process with power and hope, with the recognition that our peoples have worked hard to protect our Traditional Territories, cultures, and knowledge in the past, and it counters the stereotype that Aboriginal Peoples were simply helpless victims in these horrific processes. It assists students and instructors in recognizing their responsibilities to the coming generations and allows students to develop the skills they need to engage in effective resistance strategies once they graduate." [10] (p. 19)

Table 1 gives an overview of the topics and sample materials we read, listened to and watched and examples of webinars we attended.

Table 1. Course Content: Topics and Materials.

Topic	Sample Materials			Sample Webinars Attended
	Scholarly Articles (See Full Citation in the References)	**Podcasts**	**Videos**	
Indigenous knowledge systems and worldviews	[7,12,17,18,45,46]	Indigenous Rights Radio [47]. Traditional knowledge protects Mother Earth All My Relations Ep #9 [48] Green Dreamer interview with Galina Angarova of Cultural Survival [49]	Etuaptmunk Two-Eyed Seeing with Albert Marshall [43]. Oren Lyons on the Indigenous View of the World [50] A history of Indigenous languages [51] TEDXTalk. Etuaptmumk: Two-Eyed Seeing [52] Meshkanu: The Long Walk of Elizabeth Penashue [54] Introducing and disrupting the "perfect stranger" [55] The land owns us [56]	Môwijabôda (Let Us Unite!): Songs, Stories, and Language of the Abenaki (Dawnland) Sogalikas Storytelling Evening Decolonizing: Placing Indigenous Peoples in the Conversation Climate Change: Indigenous Perspectives Indigenous Stories—Decolonial Organizing and Collaboration in New Hampshire Decolonizing Place-Based Education Decolonizing Science: Centering Indigenous Science, Methodologies, and Practices The Iroquois and the Development of the US Government Indigenous Knowledge & Western Science: Collaboration, Relationship, and Climate Solutions
Land-based pedagogies	[6,13,21,32,33,38,41,53]			
Knowledge and cultural appropriation	[57]	All My Relations Ep #7 [58]	Cultural Appropriation [59]	
Indigenous research and decolonizing methodologies	[9,19,23,60–63]			
Resilience, resurgence and revitalization	[64–67]	All My Relations—For the Love of the Mauna Pt 1 [68] and part 2 [69]		

There were four assignments for course participants taking the course for two credits: class participation; personal and community knowledge systems, which had three parts—personal knowledge system; community knowledge, which required course participants to have zoom conversations with 2–3 local people in their community to learn where the knowledge they use comes from, using the data from the conversations participants were to create a product (could take any form such as artwork, a poster, a video, or paper) to summarize what they learned from the community conversations and their personal knowledge system; a group project on facilitating a lesson on IKS of a particular place to an audience of their choice; media assignment, which required course participants to find a topic addressing the broader theme of "Indigenous Knowledge" in the media (e.g., magazines, newspapers, YouTube, internet stories, Podcasts, TV or movie clips, blogs), and analyze how the IK concept is discussed and consider whether this is consistent (or not) with class materials and discussions. Participants taking the course for three credits had an extra assignment that focused on creating an ethical protocol to conduct research in an Indigenous or local community.

We had a variety of classroom activities. Two consistent ones included a land acknowledgment of a particular community and sharing of the learning from everyone's "sit spot" activity. We acknowledged the problematic nature of land acknowledgments, which tend to focus on only "reading a script"; we tried to educate ourselves by learning the history (past and present) of the Indigenous peoples of the places we were acknowledging and also discussed ways of building authentic relationships with them. The idea of including a "sit spot" in our learning was inspired by the Abenaki Elder who shared his wisdom on "learning from the land."

3.2. Autoethnography

Seven of us (five participating as students, one teaching assistant and one course instructor) discussed as a team the idea of sharing our decolonial journey through our experiences of the course. A summary of our team, including our roles and key lessons from the course, is given in Table 2. We framed our accounts with personal reflections of ourselves. As such, we applied an autoethnography approach, which is a type of self-narrative that enables researchers to draw from their own life histories and experiences to understand cultural experiences [70,71]. Essentially, autoethnography is about writing the personal and its relationship to culture [72].

Table 2. Author Major, Role in Class and Key Lessons.

Name	Degree Major	Role in Class	Key Lessons and/or Decolonization Factors
Sara	Environmental education	Teaching assistant	Centering programs in Indigenous philosophies of education—the differences between IKS and WKS; Etuapmumk/two-eyed seeing—acknowledging truth and centering Indigenous culture bearers are keys to presenting IKS as a non-Indigenous environmental educator; Discomfort.
Sal	Environmental education	Student participant	Centering programs in Indigenous philosophies of education—understanding of the difference between IKS and WKS; Privileging Indigenous voices and engaging Elders; Indigenous ways of teaching and learning—story telling, language; discomfort—impacts of settler colonialism.
Nicolette	Environmental education	Student participant	Centering programs in Indigenous philosophies of education-Indigenous presence, Knowledge systems; Classroom culture; Discomfort—impacts of settler colonialism.
Emily	Environmental education	Student participant	Centering programs in Indigenous philosophies of education—IKS and WKS; Privileging Indigenous voices and engaging Elders; Hybrid third space; Discomfort—impacts of settler colonialism.

Table 2. *Cont.*

Name	Degree Major	Role in Class	Key Lessons and/or Decolonization Factors
Jennie	Conservation biology	Student participant	Hybrid third space; discomfort—impacts of colonialism; Classroom practices.
Emma	Environmental education	Student participant	Role of discomfort in transformation; always becoming; positionality; classroom practices.
Jean	Environmental education	Instructor	Positionality—informal and formal education experiences; Umunthu "I am because we are, and because we are, therefore I am" ([22], p. 108); Sankofa "It is not wrong to go back and fetch what you forgot" ([73], p. 1); two-eyed seeing; discomfort; always becoming

To give further context regarding the course, we share Jean's reflection:

I was the course instructor who is not Indigenous in the community where I currently live and work though I am Indigenous in my home community. My passion for and interest in Indigenous Knowledge Systems started when I was young watching my great grandmother make traditional medicines for people who'd come to seek help for various illnesses. I learned a plethora of IK including farming since we were subsistence farmers. However, when I went to school, I was quickly told not to bring the knowledge and practices we were using at home, rather to focus on the real and valid knowledge which was the western knowledge. The more western education I got, the more I discounted the knowledge I grew up with. It wasn't long after I got my masters degree in environmental science and policy that I started questioning my education up to that point particularly why the IK we were practicing at home was not accepted in school, what could have been the problem if we learned both knowledge systems i.e., practice "Two-eyed Seeing"? I therefore decided to go back to school to explore IKS and environmental education. I follow scholars who promote IKS as valid and valuable in their own right (e.g., [11,13,14,17–19]). I have found the sub-Saharan notions of Umunthu/Ubuntu—"I am because we are, and because we are, therefore I am" ([22], p. 108) and Sankofa—"Return to the source and fetch", put it differently, 'it is not wrong to go back and fetch what you forgot'. [73] (p. 1)

Umunthu and Sankofa guide my work both as an educator and researcher. Consequently, as the instructor, I approached the class as a co-learner with all participants. While I designed the syllabus with course content that privileged IKS, I sought feedback from Sara, the TA who gave valuable input on assignments and resources including identifying relevant guest speakers. We debriefed each class and used the feedback to inform the next class. Sara and I took turns facilitating class activities. I tried to foster an atmosphere for all course participants to feel they could participate fully. Creating group norms and reminding ourselves every class helped. In addition to Umunthu, I have found Maxine Green's quote "always becoming" very helpful and promoting a sense of humility. This framing reduces the pressure of 'perfectionism' or to 'get it right.' Furthermore, I am dawn to Battiste et al.'s call for educational institutions to "think, unthink, and rethink" [4]. The fact that this is a spiral process rather than linear demonstrates that we are not working towards a destination, instead we always have to keep 'learning, unlearning and re-learning.' Decolonization is a process not a destination. This understanding framed the course from the beginning and we all kept reminding each other every class—especially when guilt, fear and hopelessness emerged.

As co-learners in the course, instructors and participants alike, we learned from Indigenous and non-Indigenous sources and attended relevant webinars (Table 1). We also learned from each other—we held engaged discussions and shared our fears and hopes.

4. Key Lessons on the Decolonial Journey

We each prepared our reflections on the course and analyzed the reflections for decolonial factors in education. Four factors were evident: centering programs in Indigenous philosophies of education, privileging Indigenous voices and engaging Elders as experts, promoting Etuaptmumk/two-eyed seeing, and employing Indigenous ways of teaching and learning. Furthermore, our reflections revealed feelings of discomfort, grief and guilt following the realization of the historical and present-day truths of colonialization. We also highlight classroom practices that enabled our learning together.

4.1. Deconial Factors in Environmental Education

4.1.1. Centering Programs in Indigenous Philosophies of Education

Indigenous philosophy of relationality was fundamental in the design of the course. Within this philosophy, knowledge is conceptualized as holistic and dependent upon relationships and connections to living and non-living beings [11,13,19–23]. We came to understand that IKS and WKS are distinct ways of knowing, the importance of paying attention to unexamined assumptions that tend to influence the way we view the world (e.g., why IKS are regarded as inferior and not valid ways of knowing and being), and the resistance against settler colonialism and assimilation demonstrated by Indigenous communities. These points are evident in the excerpts from the reflections of Sara and Sal:

> I learned first and foremost that Indigenous knowledge and Eurocentric/Western knowledge systems are two distinct ways of knowing. Though specifics may differ between communities, I came to understand that Indigenous knowledge is experiential [17], incorporates Oral Tradition [21], and is based on deep knowledge of a place gained through thousands of years of living in close connection with the landscape [74]. Knowledge is passed through generations via Elders, knowledge holders, language, culture, sacred histories, and ceremonies [21,52,64]. Leilani Holmes [45] explains IKS as knowledge for the sake of "inciting humans to act in ways to ensure protection and reproduction of all creatures in the universe" [45] (p. 37). In contrast, Western/Eurocentric Knowledge prioritizes writing [17], book learning, separates and categorizes [14], is often decontextualized from place [75] and forged around hierarchies, linearity, individual gain, and the rule of time [19]. (Sara)

> Just as the Indigenous knowledge systems we learned about tended towards a holistic, relational perspective rather than isolated components, I came to understand that how people engage with others in their professional lives emerges from a broader way of understanding and interacting with the world. Brown [76] suggests that the European colonial paradigm has its origin in the dismantling of the holistic self: "When the European male ... separated their mind from their heart ... this emotional detachment from their lands allowed them to leave their homeland and export their philosophy of oppression throughout the globe [76] (p. 28). (Sal)

4.1.2. Privileging Indigenous Voices and Engaging Elders as Experts

The materials we chose to read, watch and listen to, including the webinars we attended, were mostly created and facilitated by Indigenous scholars and practitioners (Table 1). We learned from the Elders who visited our class as guest speakers, which is a key decolonization factor supported by Indigenous scholars (e.g., [2–4,11]). Emily and Sal share their take on this:

> Through the oral stories of Jean and guest speakers, including the Abenaki Elder, and the written narratives of Indigenous scholars, we began to learn about Indigenous ways of knowing. While it is impossible to generalize what this knowing entails across every Indigenous group, there are some shared aspects, among them: Land-based learning—culture, language, and community developed in conjunction with the Land; relational learning—knowledge that comes from and is developed through relationships; and stories—knowledge shared through narratives and oral tradition [6,13,14,17,38,41,45,75]. (Emily)
>
> When the semester began, my understanding of what defined an Indigenous knowledge system was blurry at best. Each week, as we listened to Indigenous voices through scholarly articles, podcasts, guest speakers and videos, portraits of many knowledge systems came into focus. They held in common an emergence from the land itself and a way of being in interdependent relationship. Rasmussen and Akulukjuk [14] illustrated this emergence from the land in their conversation about language. "In Nunavut, the land speaks Inuktitut. What I mean is that the land (and sea) evolved a language to communicate with (and through) human beings, namely an Indigenous language that naturally "grew" in that area over thousands of years of interaction between the elements and the human and plant and animal beings" [14] (p. 279). (Sal)
>
> Additionally, the course privileged Indigenous writing and orality.

4.1.3. Promoting Etuaptmumk/Two-Eyed Seeing

"Two-eyed seeing" described in the literature review section was another factor that was deemed important by participants. Sara found this notion a useful tool in her role as a non-Indigenous educator:

> As a non-Indigenous educator, how do I present the unique strengths of both Indigenous and Western knowledge, rather than centering Western knowledge or inauthentically blending the two, in my education? I learned the first steps to this are truth and relationships.
>
> Etuaptmumk/Two-Eyed Seeing in environmental education, a field based on the land, first and foremost means acknowledging truth. The truth in the context of the United States is that, wherever we teach, we are teaching on lands Indigenous Peoples have lived on and had deep connections with since time immemorial [77]. One way we acknowledged this in class was the class practice of beginning each meeting with a land acknowledgement to center the Indigenous communities, their history, and current presence on the land we were all zooming in from. For me, reading Decolonizing Methodologies by Linda Tuhiwai Smith [19] and listening to All My Relations with Matika Wilbur, Dr. Adrienne Keene, and Desi Small Rodriguez [48,58,68,69] were also foundational to understanding historical and current injustices, as well as how Indigenous-colonizer relations and knowledge systems inform harmful practices in Environmental Education to this day.
>
> Finally, I learned that practicing Etuapmumk/Two-Eyed Seeing in Environmental Education also requires centering Indigenous connection to landscapes through Indigenous voices, themselves. Centering Indigenous voices means establishing relationships with Indigenous culture bearers who can present knowledge in a firsthand, culturally appropriate manner; relationships that are built for the long-term based on respect and Indigenous sovereignty of cultural material. Dr. Linda Tuhiwai Smith explains what such a relationship might look like beautifully, in that " . . . for many researchers the purpose for the relationship is the project, not the relationship, whereas I think for Indigenous communities, they come at the relationship as that is the purpose. You get the relationship right, you build the

relationship, and then you can do many projects. Not just a single project . . . It's never about a single project or a single purpose." [78]

Jennie and Emily do not use the term "two-eyed seeing," they instead talk of a "hybrid third space"' in the context of classroom practices. A hybrid third space could be considered similar to "two-eyed seeing" because it is a space that entertains "both/and" notions [79]. "In our hybrid third space . . . everyone is continuously adding to their knowledge systems through various media. My journey broadening mine" (Jennie).

> In our classroom Zoom space, we began the lifelong process of developing a set of skills to build another space—a "hybrid third space" [79] cited in [75], as described by Jean, our professor, where both Indigenous and Western knowledge systems are recognized as legitimate and powerful ways of engaging with the world. As is so beautifully discussed by June, we learned early on that the goal of this course was not to "blend" Indigenous and Western knowledge, particularly because this blending tends to occur within a Western knowledge framework [8,18,60]. Instead, in this third space, "sharing our stories with each other as participants in the learning process (educators and learners) allows us to understand each other's socio-cultural contexts and contributes to the process of decolonization and inhabitation" ([75], p. 123).(Emily)

4.1.4. Indigenous Ways of Teaching and Learning: Importance of Storytelling

The application of Indigenous ways of teaching and learning, such as storytelling, was helpful for participants. Sal explains:

> In learning from Indigenous Peoples whose languages, values, stories and ways of living are intricately rooted in the land, I became acutely aware of the disconnection embedded in the settler colonialism of my own communities. As guest speaker, an Abenaki Elder pointed out, even the English language upholds this paradigm. "English is a language of nouns—of things—it's a good language to place values, commodify, put things in boxes, hierarchies—for business (Elder, paraphrased from personal communication, 10 February 2021). Rasmussen & Akulukjuk contrast English, a language of economics and money, with Indigenous languages, which tend to be more interactive with and descriptive of the environment [14].
>
> My goal in taking the course had been to learn how to navigate being an interpretive park ranger in places where Indigenous Peoples have been forcefully removed from the land and whose cultures have often been appropriated for the benefit of White tourists. I wanted to find out how to incorporate more inclusive storytelling, management and decision making. Insights that emerged from this course helped me work towards a better understanding, but they were not in the form of a neat how-to list. Just as the Indigenous knowledge systems we learned about tended towards a holistic, relational perspective rather than isolated components, I came to understand that how people engage with others in their professional lives emerges from a broader way of understanding and interacting with the world . . . Storytelling is an important way of passing along knowledge for the Indigenous Peoples we learned from, and is also core to my work in park interpretation. Kimmerer [18] asks, "What happens when we truly become native to a place, when we finally make a home? Where are the stories that lead the way?" ([18], p. 207). The Indigenous voices we listened to throughout this course reinforced that the stories we tell from the past shape our present and future. Stories that emerge from the land, including from those who have stewarded it for millennia—heard through our minds and our hearts—may be enough to change our own and our communities' values and relationship with the land.

4.2. Discomfort, Guilt and Fear

It is true that the course experiences were enriching, while at the same time, the knowledge of the historical/present-day truths of colonization and cultural appropriation created discomfort, guilt and fear. This dilemma was expressed by many of us as illustrated in the excerpts below:

> It was hard to come to terms with the actual history and current state of treatment of Indigenous cultures. I began to struggle and still do with the question of how to make things right. When millions of people live on stolen land how do we right the wrong? (Nicolette)

> I found difficulties in negative tones brought into class through discussions and how to perceive that for myself. Some of the topics left a sense of depression and hopelessness for people as a whole. How were we ever going to change, resolve, grow from the oppression, genocide, and complete annihilation of Indigenous peoples and cultures? (Jennie)

> As Indigenous voices and stories passed over and through us, it became clear that the shield of academic distance would not protect us from processing course content on a personal level. Learning about various ways of understanding and engaging with the world led each of us to dig deep into our own understandings of the world. This reflection was facilitated by class conversations and in representing our own knowledge systems. For me, learning about Indigenous Peoples whose cultural stories and practices were concentrically interconnected with and born of the land around them was a beautiful and awe-invoking experience. But the flip side of a world opened to that beauty is to unavoidably acknowledge and feel the devastating losses, violence and injustices that Indigenous Peoples have faced from settler colonialism. Throughout the class, I found myself processing grief for the violence incurred by so many Indigenous communities, for the displacement from and destruction of Indigenous lands and for the suppression and loss of knowledge systems that have been built over millennia. (Sal)

> As important was the work my classmates and I—most of us Western settlers—did to begin unraveling and decolonizing the ways in which settler colonialism has impacted our understanding of the world: identifying the "hidden" or "silent" curriculum (e.g., [13,17,19,33,53]). By following some of the precepts of Indigenous research methodologies—including emphasizing shared knowledge and reciprocity and respecting the rules and values of a community [9,60], we were able to navigate challenging conversations in class and in our project research. For our final project, we investigated our own knowledge systems and that of our communities by asking questions such as "how do you determine what knowledge is worthwhile?" and "how do you come to know?" These were surprisingly difficult questions to answer as those of us who are settlers (and, to some extent, those of us part of any dominant group) rarely take the time to consider where our understanding comes from. Examining the answers to these questions, though, is a vital part of acknowledging how Western thought dominates spaces—if we want to be a part of creating a third space where Indigenous and Western knowledge systems can coexist, we settlers have to know when and how to step back. As we worked in our Zoom space, developing a hybrid third space, perhaps we were beginning a praxis of learning how to work within the sphere of discomfort. (Emily)

For Emma, the discomfort was necessary for transformation to occur:

> My life/work as an environmental educator centering growing community requires that I am always becoming, always transforming. Strand by strand unweaving the ways of knowing passed down to me and weaving a new tapestry.

This transformation process was nurtured through the Indigenous Knowledge Systems course. The role of discomfort in transformation is to illuminate intuition deep down. This intuition guides me towards ways of knowing that grow emergence and abundance. Below, I describe a few of the discomforts that arose for me during the course and how I allowed them to guide my intuition towards transformation.

As an environmental educator and grower of food, medicine and community, it becomes more and more apparent how my positionality as a white, financially-privileged, US citizen really impacts the ways of knowing that I privilege. "Colonialism goes beyond territorial conquest: it affects one's epistemological stance, worldview and perceptions," [75] (p. 106). Through the unweaving of my ways of knowing, the depth of white colonial perspectives embedded in my worldview and embodied in my practices surface. Understanding that entanglement contextualizes in my own experience why land back is central to decolonization and also requires a real movement to decolonize our minds, bodies and spirits. In Indigenous Knowledge Systems and beyond, I have addressed and listened to this discomfort and let it guide me towards deep listening. Learning how to see interconnectedness through two eyed seeing [27,52], how to follow community protocol and value the time it takes to build meaningful trust for strong communities.

The deeper I dive into my positionality, the more I worry about inflicting violence on the land and those I work with by perpetuating white colonial worldviews. Language is a fundamental mechanism of eurocentrism permeating education. Tommy Akulukjuk pointed out in a letter to a friend and colleague that words such as 'wildlife' in English work to distance speakers of colonial languages from the more-than-human world [14]. Inuktitut, he contrasts, utilizes no such words to separate humans from the Earth. Points such as this raise questions: what else do I say that undermines Indigenous ways of knowing? Fear bubbles, but does not take the lead in my response to this discomfort. Instead of letting fear guide, in Indigenous Knowledge Systems we collaboratively engaged in discussion about how to decolonize systems of education and indigenize the practices we bring to our life/work.

Deepening practice related to identity and life/work lead me to discomfort in how I actually show up to my life's space/time. The course acted as a diving board, but now I am going head first into life hoping that once I hit the water I can swim without pulling others down for my own survival. This discomfort guides me to slow down. The reality that time is not linear, but circular nurtured a realization that relationships are sustained through reciprocity developed in cycles of space/time. Action must be taken, but the approach to action that my white colonial mindset brings up is fast and furious, not deep and rooted. adrienne maree brown writes, "We need each other. I love the idea of shifting from 'mile wide inch deep' movements to 'inch wide mile deep' movements that schism the existing paradigm," [80] (p. 20). Following the Indigenous Knowledge Systems course, I feel ready to follow intuition guided by discomfort towards slow, deep movements towards an authentic and Indigenous led decolonization and indigenization movement.

Jean reflected on the challenges she faced as the instructor of the course:

While I tried my best to create a course that elevated Indigenous worldviews in content and process (e.g., Umunthu and Sankofa), there were times I found challenging. For example, when participants felt discomfort by the impacts of colonialism in general and settler colonialism in particular, on Indigenous peoples—I didn't have the right tools to provide the needed support. Simpson [11] recommends that programs promoting decolonization need to have

> necessary support strategies in place–which I didn't have. Another difficult moment was participants asking whether it was right for non-Indigenous peoples (as all of us in the class are) to teach IKS? Would we be appropriating? These were tough questions that we worked through by learning from Indigenous Elders, scholars and practitioners (either as guest speakers or through materials they have created.) We learned that as non-Indigenous people in our communities, devoting time to create trusting relationships with Indigenous peoples in our communities is key. I must say that being non-Indigenous to this community and continent was challenging at times. I am grateful to the whole class for being open and journeying together.

4.3. Classroom Practices

The way the class was structured promoted learning among participants, as outlined in the excerpts below.

> I was able to begin my understanding of knowledge systems because of the culture of our virtual classroom. Jean helped foster a feeling of equity and respectful curiosity. Questions were considered and asked respectfully. Answers were considered and given respectfully. Ragged thoughts were honored and explored. As a class we felt comfortable sharing our vulnerability and extreme discomfort with the past and the current reach of colonialism. However, in class there was a consistent reminder to not center ourselves in the work. While we may be on personal journeys to understand and feel a personal responsibility in unintentionally upholding the systems of colonialism, making change isn't to make us feel more comfortable. We "are always becoming" and these changes will take time and respect for both ourselves and others. (Nicolette)
>
> For Jennie, the "sit spot" activity was helpful in processing difficult topics:
>
> As part of our learning process, we were encouraged to explore these difficult topics in an organic manner. Some ways that helped were mindfulness while outdoors. I would gaze at the sky while out with my dogs. Some nights it was snowing and others it was so clear where the stars were able to glisten. But no matter the weather, I would stand outside and let my mind wander through the topics I struggled to understand.
>
> I was often sent back to moments at Uluru, where there was an overwhelming feeling of welcoming to gaze into a secret world. A world where the past, present, and future elders and members could be properly honored. Where dreaming is a way of learning and understanding. A way of communication between generations. Bob Randall, a Yankunytjatjara Elder and traditional owner of Uluru, describes this feeling exquisitely in an interview, The land owns us. Uluru "doesn't push anyone out but brings everyone in and a completeness of being who you are where you are is a really good feeling; it's a beautiful feeling and I wouldn't exchange that for anything in the world" [56]. (Jennie)
>
> Our collective dialogues, shared reference materials and projects encouraged me to decolonize my personal knowledge systems and find respectful ways to indigenize the growing practices I center and share. (Emma)

5. Discussion and Conclusions

Through our decolonial journey, we learned that, as environmental educators and conservation biologists not Indigenous to the communities where we reside and work, engaging with decolonization factors in EE programs is central. Four factors were evident in our course: centering programs in Indigenous philosophies of education, privileging Indigenous voices and involving Elders as experts, promoting Etuaptmumk/two-eyed seeing, and employing Indigenous ways of teaching and learning. These are some of the factors Indigenous scholars identified as foundational in the decolonization process in

education [2–14,20,21,27,28,37]. The four factors are highlighted in Table 2 and in Section 4 of the paper. Our story adds to the scholarly work on decolonization practices in education.

Another common theme was centered around feelings of discomfort. All of us struggled at one point or another. For instance, realizing the depth of the impacts of colonialism on Indigenous peoples caused grief and guilt (Emma, Sal, Jennie, Nicolette, Sara). The idea of teaching IKS when one is not Indigenous in a place caused fear of appropriation (Jean). What we found helpful was the application of Indigenous ways of teaching and learning, such as storytelling (e.g., Sal, Nicolette) and reflecting (e.g., Jennie). In this way, we were able to focus on both content and process. Another strategy that worked for us was framing the course with the understanding that decolonization is a process instead of a destination; as such, we are on a learning journey that is a spiral process that involves "learning, unlearning, and re-learning." Realizing that "we are always becoming" (Maxine Green) takes the pressure off to aim for perfectionism (Emma, Nicolette, Jean). The co-learner model, classroom environment and the relationship between participants were highlighted as factors that contributed to positive learning outcomes (e.g., Nicolette, Jennie, Emma). As scholars argued, incorporating Indigenous teaching and learning pedagogies has positive outcomes [31–33].

We applied these decolonization factors as a first step acknowledging that we could have done more and that decolonization is an ongoing process. Yes, we had Elders as guest speakers; however, it is recommended that Elders need to be engaged on a continuous basis rather than as guest speakers here and there [11]. The course was taught on Zoom and would have been more impactful with the opportunity to learn from the land in concrete and meaningful ways. The limitations we highlight should be considered next time the course is taught.

By sharing our stories, we join the conversation on the call to decolonize the environmental education field, particularly decolonial educators who are seeking respectful and ethical ways to engage with Indigenous knowledge systems.

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