Kinship: Bridging Childhood Fear and Hope in the Climate Crisis

by

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ABSTRACT

There is increasing concern about children's well-being in the face of climate change. Although climate action programs in schools are designed to empower children to act as changemakers themselves, there is very little knowledge on eco-anxiety and fear, the shadow side of this new childhood responsibility to advocate for future survival.

Through an exploratory process using a futures approach and analyzing academic discourse across disciplines, key insights were generated and braided together to create a framework for arts-based climate change education for children, based on Kinship through the climate action of reciprocity. This research at the intersection of education, Indigenous knowledge and the arts, aims to provide context and leverage points helpful in collaborative research and program design. The goal of this research is to foster the development of climate change education for children that is informed, caring, and based on decolonial 'thinking, feeling and doing', as an emergent strategy to help move education toward interconnection with the more-than-human world while mitigating childhood eco-anxiety.

This research indicates the need for further research, using creative and participatory methods, with Indigenous and non-Indigenous artists and educators, in partnership with children and their teachers.

LAND ACKNOWLEDGEMENT

This research acknowledges the ancestral and traditional territories of the Mississaugas of the Credit, the Haudenosaunee, the Anishinaabe and the Huron-Wendat, who are the original owners and custodians of the land on which we stand and create.

DEDICATION

To all the children who have taught me how to be human.

I bear witness to your care and kinship with the more-than-human world.

Thank you for inviting me to share in your conversations with trees,

your dances with the wind,

and your fierce protection of your little ant friends.

I am truly grateful.

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CHAPTER 1: INTRODUCTION

Time has come now to stop being human

Time to find a new creature to be

Be a fish or a weed or a sparrow.

-Matt Berninger & Aaron Dessner, *Not in Kansas*

Time has come to stop being human in the human ways of the Anthropocene. Human domination over the natural and non-human world has resulted in climate change, which in turn, threatens future human survival.

We need new ways of being human, new ways of seeing ourselves in relation to the world. Our children know this. They are demanding climate justice and systems change. They are demanding that we change.

This research is inspired by concern for our children's well-being and resiliency in the face of complexity and the burgeoning force of rapid climate change. Although climate action programs in schools are designed to empower children to become changemakers themselves, there is emerging concern amongst educators about childhood eco-anxiety. It seems that the more we increase children's awareness through education and media saturation about climate change and biodiversity loss, the more we risk fueling eco- fear. There has been very little research on children's feelings about climate change and this new responsibility of childhood to advocate for their own survival.

How we educate children for climate action is beginning to gain attention. Research indicates that the most commonly used top-down approach based on rational knowledge is less effective than creative, participatory approaches (Rousell & Cutter-Mackenzie-Knowles, 2017). Research also indicates that the social-emotional dimensions of climate change could help shape new creative arts-based pathways to climate education (Monroe, 2017). This insight indicates an opportunity for innovation in arts-based approaches.

And most importantly, Indigenous knowledge indicates that Earth connections, reciprocal relations and Kinship may be the best and most hopeful pathways forward.

How do we turn crisis into opportunity? We have much to learn through exploration, collaboration and co-creation with children, teachers, artists and Indigenous partners.

This research paper is designed at the intersection of education, Indigenous knowledge and the arts to offer insights that could be helpful in collaborative design sessions for arts-based climate change educational programs for children. This research aims to i) better understand the current state of climate change education for children and ii) gather insights of opportunity, for an arts-based approach, toward childhood well-being through deepened connection and Kinship with the more-than-human world. Evidence from academic literature has been collected across disciplines and braided together to determine common themes, insights and implications for further research.

There is no doubt it will require imagination and innovative partnerships to catch up to our children.

CHAPTER 2: RESEARCH METHODOLOGY

2.1 RESEARCH QUESTIONS

1. How might existing and emerging knowledge help identify the opportunity space for an arts-based approach to children's climate change education that reflects a more-than-human perspective?

2. How do we best approach the social-emotional dimension of climate change education, through the arts, in the face of childhood eco-anxiety?

2.2 RESEARCH METHOD AND LIMITATIONS

This paper is based on qualitative research aiming to identify common themes and insights across disciplines and to identify research gaps. Data is sourced from scholarly literature across disciplines including education, decolonized futures, psychology, art, philosophy, health, and science. Literature reviewed was open-source literature available on Google Scholar.

Research is based on access to the literature available in the English language only, produced in North America, Europe and Australia. This research is limited and biased by the Western worldview of the institutions in which it was created.

Keywords: climate change education, children, climate arts, eco-anxiety, Indigenous knowledge

2.4 PERSONAL BIAS

I am a kindergarten teacher and a mother of white privilege.

I trained as a dancer and academic in Western institutions.

I am an artifact of a Western, colonial framework.

And I am open to learn and unlearn.

I am open to dance with the Earth (again).

CHAPTER 3: CONTEXT

3.1 FUTURE THINKING: STRATEGIC FORESIGHT

It is important to ground this research in the context of desired futures. Although imaginings of the future of education are far beyond the scope of this research paper, a goal post for the desired future needs to be set before discussing innovation in the educational space.

Strategic foresight is valuable for any innovation development in this uncertain and complex time because it helps imagine a desired future and the strategies to get there; however, the process encourages iteration and allows for emergence along the way. The foresight journey cycles through eight steps; vision, mapping, scenarios, values, vision (revisited), strategic narratives, backcasting and mile markers. Foresight methods ask us to imagine an aspirational future but forgo the desire to reach our destination intact, opening the possibilities of what may become as a result of the journey. This approach resembles the spirit articulated by Elwood & Andreotti (2019) in *Towards Braiding* in that there is no obvious pathway to an assigned destination of post-colonialism, only a willingness to become the result of the journey (Maggs, 2021).

Strategic foresight helps structure a relationship to the future without trying to predict it. As Maggs (2021) contemplates the future of art, "Adopting a spirit of strategic foresight may not require a full-blown development exercise as described above. The field holds value even when stripped down to its most relevant ideas for our circumstance: resist prediction and turn to the future, not for what we need to do, but for what we need to become." (p.58). Wise words.

As the arts sector opens itself to transformation, the education sector needs to do the same. Art and education's relationship to social change are both bound to the promise of a better world to come. A very different relationship between art, education and society is emerging—one requiring significant changes to the status quo.

3.2 EDUCATION IN THE ANTHROPOCENE

We live in the current geological age known as the Anthropocene or 'age of humans'—an age in which human activity is a central driver of planetary reality (Maggs, 2021). In the entangled realities of the Anthropocene, human subjectivities are no longer merely reflective of planetary realities but increasingly causing and shaping these realities, including fundamental and irreversible environmental change. Therefore, educators and artists must ask themselves: how do we want to shape the world?

The Anthropocene is a threshold that makes us consider our existence, responsibilities, and actions regarding how we live. The Anthropocene is changing how we think and how we educate, enabling new conversations around human-dominated global change, human exceptionalism and the nature-culture divide (Cole & Malone, 2019). Discourse has an underlying focus on trying to understand what it actually means “to be human in a world where being human is being disrupted and interrogated" (Cole & Malone, 2019).

As Glasser (2019) refers to Bauman's idea of liquid modernity, "We presently find ourselves in a time of "interregnum"—when the old ways of doing things no longer work, the old learned or inherited modes of life are no longer suitable, but when the new ways of tackling the challenges and new modes of life better suited to the new conditions have not as yet been

invented, put in place and set in operation" (p. 69). This means we are caught between these two worlds, where conventional practices no longer fit and new ways have not fully arrived. This is a place of great uncertainty but of great opportunity. To safely pass through the "interregnum," we need to get our story right. As Glasser (2019) says, "To do this, we must acknowledge—and respond to—the gaping discrepancy between where we are as a species and where we want to go"(p. 69).

3.3 THE FUTURE OF EDUCATION

There has been much discourse on the purpose of education ever since the massive and continued disruption of globalization and digitalization. But now, post-pandemic recovery, the crisis of social justice and the urgency of the climate crisis are increasing the pressure on education and its purpose. Indeed, transformation is required to move us from education based on anthropocentric values to education based on ecocentric values, moving us toward the right relationship with the more-than-human world.

A complete Strategic Foresight process on the future of education is beyond the scope of this research. However, to ground the paper in a futures-oriented spirit, with aspirational vision as context, work has been borrowed from a background paper for UNESCO's education futures discussions, prepared by the Common Worlds Research Collective in 2020.

The paper called *Learning to Become With the World* describes several desired future scenarios, demonstrating ecological consciousness, for the year 2050 based on the following three premises as stated by Taylor, Silova, Blaise, Pacini-Ketchabaw & Cowan (2020):

> Firstly, human and planetary sustainability is one and the same thing. Secondly, any attempts to achieve sustainable futures that continue to separate humans off from the rest of the world are delusional and futile. And thirdly, education needs to play a pivotal role in radically reconfiguring our place and agency within this interdependent world. (p.3)

From *Learning to Become With the World*, the following scenario will serve as the context for this research. Taylor et al. (2020) propose that **"By 2050, we have stopped using education as a vehicle for promulgating human exceptionalism. We are teaching that agency is relational, collectively distributed, and more-than-human"** (p.5).

A more-than-human construct opens up a discourse on what education might mean beyond the human-centric myopic construct that caused the mess of climate change in the first place. More-than-human informs the collaborative, collective, mutually recuperative lessons we urgently need for future survival on this planet (Taylor et al., 2020).

Now is the time for a new way of being human. Now is the time to learn how to become *with* the more-than-human world in which we are entangled and embedded and to which we are indebted (Taylor et al., 2020). Realizing such a vision, such a challenge to the status quo, relies on learning how to transition society from today's dominant metanarrative, with its vision of individualism, anthropocentrism, exploitation, and inevitable progress, to a life-affirming metanarrative, based on a commitment to the common good, conservation and regeneration of resources, identification with all life and progress with limits (Glasser, 2019).

3.4 THE MORE-THAN-HUMAN WORLD

We are only human in contact and conviviality, with what is not human.

-David Abram, *the Spell of the Sensuous*

The term 'more-than-human', first coined by philosopher David Abram and now commonly used by ecologists, provides a sense of the vast and wild animate Earth within which our human culture is nested. Human culture is viewed as a subset, embedded, immersed and entangled, in the much larger, more-than-human world. This concept implies a significant shift in the way we see and 'feel' the world.

More-than-human is closely aligned with Indigenous perspectives, where it means that mountains, rivers, clouds, plants and animals are all living, sentient beings with agency. It de-centres humanity to heal our current estrangement with the Earth and return us to the multiplicity and plurality of life. It is about connection and relationships. Reciprocity (mutual give and take) is essential to any healthy relationship. As Wohlleben (2016) says in *The Hidden Life of Trees, "*That means it is okay to use wood as long as trees are allowed to live in a way appropriate to their species. And at least some of them should be allowed to grow old with dignity and finally die a natural death" (p.243).

3.5 BRIDGING THE NATURE/CULTURE DIVIDE

The most profound challenge to this required paradigm shift is moving education from the Cartesian divides that structure its established human-centred knowledge traditions and pedagogies. These divides – for example, nature/culture, mind/body subject/object – position learning *about* the world from a safe and privileged distance. These dichotomies reinforce that an exteriorized world is separate from us and passively waiting to be managed by us. As Taylor et al. (2020) state, "the divides disassociate us from our sense of ecological being and belonging – they block the ecological consciousness required for survival" (p.10). For example, nature and culture should be considered as one interrelated system. An integrated eco-social perspective is based on interconnectedness and could be applied as the basic principle for all learning and educational practices (Lehtonen, Salonen & Cantell, 2018).

3.6 EMERGENT STRATEGIES

Yes, we need a paradigm shift. However, the climate crisis, better defined as a crisis of climate justice, is urgent. We cannot wait for educational transformation. Institutions, policy and curriculum, are slow to change, but our children are quickly growing within an educational system that has not been designed for survival. As Cook (2019) says, "Education systems cannot be shut down, redesigned and then restarted as one might an outdated factory"(p.20).

We need to make haste and start trying new things to begin to shift the paradigm needle. Innovation in climate change education, through research, experimentation and iteration, is one of those things. Climate change education can be designed right now as an emergent strategy. We could begin to design new programs and new attitudes immediately. Given the potential of

education everywhere, in schools, at home, in communities, online, in the media, in theatres, in parks and elsewhere, this presents an opportunity space for emergence everywhere.

This paper is based on emergent strategies, not paradigm shifts. Emergence describes the way complex systems and patterns arise out of a multiplicity of relatively simple interactions. We can begin in small ways, from the inside out, to begin to shift the narrative within any network of stakeholders. Emergence emphasizes critical connections over critical mass while building authentic relationships and listening with all the senses of the body and mind (Brown, 2017). According to Adrienne Maree Brown (2017):

> The crisis is everywhere, massive, massive, massive. And we are small. But emergence notices the way small actions and connections create complex systems, patterns that become ecosystems and societies. Emergence is our inheritance as part of the universe; it is how we change. Emergent strategy is how we intentionally change in ways that grow our capacity to embody the just and liberated worlds we long for. (p.3)

Climate change is a global problem. Global human and non-human interconnections constitute the climate change crisis, and real climate solutions will likely require global unity from a political, economic and social perspective. This research, however, is based on emergent strategies, on small and local actions, in schools, families and communities, to support the personal and emotional lives of young children facing climate change. Based on theories of emergence, these small actions can begin to shift the needle on education, a key component of global change.

CHAPTER 4: FINDINGS FROM ACADEMIC LITERATURE

4.1 CHILDREN AND CLIMATE CHANGE

Will polar bears melt?

-child, age 7 (anonymous)

4.1.1 CHILDREN IN A COMPLEX AND UNCERTAIN WORLD

Children in the Anthropocene are growing up in increasingly uncertain and precarious times with the disruption of globalization and digitalization, augmented by the social, cultural, and environmental effects of global climate change that permeate their everyday lives and communities (Selby & Kagawa, 2012). Cultural issues associated with climate change are deeply entrenched within the public domain through diverse informational, digital, and social media forms. (Rousell & Cutter-Mackenzie-Knowles, 2019). And now, a global pandemic has been added to the mix. Our children are growing up in an era of crisis.

4.1.2 CHILDREN AS CHANGEMAKERS

Children are demanding systems change; their house is burning. Children are demanding climate action to address environmental problems, problems they did not create, to ensure their own future survival. Inspired by Greta Thunberg in 2018 and 2019, the global youth climate strikes demonstrated children's intergenerational influence in their schools, families in their communities. And while children are being encouraged to become changemakers on the

climate crisis, very little attention has been given to the shadow side of this new childhood responsibility, namely eco-fear and eco-anxiety.

4.1.3 CHILDHOOD ECO-ANXIETY

The climate crisis may be leading us to a crisis in children's well-being. We see an increase in news items discussing eco-anxiety and climate anxiety, childhood eco-anxiety in particular. Eco-anxiety describes various symptoms of anxiety caused by environmental degradation and the fear that the future of civilization is being threatened (Pihkala, 2020). While eco-anxiety and climate anxiety are the terms most commonly used, many other related terms are gaining attention in recent years, such as climate grief, environmental despair and eco-guilt. There is a growing research interest in these phenomena, but research is lagging behind the public discussion (Pihkala, 2020). As Pihkala (2020) states, "There is a need for more data and more theoretical discussion about the phenomena related to eco-anxiety" (p.26).

The Sustainability & Education Policy Network (SEPN) recently published a Climate Change Education Primer for K to 12 (2020) that refers to the following research:

> As students' knowledge about climate change grows, they may develop eco-anxiety (Norgaard, 2011). While small doses of concern can provide motivation for action, feeling anxious can result in passivity and hopelessness, especially if the learner is not provided with tools for taking action (Clayton, Manning, Krygsman & Speiser, 2017). In light of growing reports of youth experiencing eco-anxiety (Elks, 2019), educational approaches must bolster the agency and empowerment of students to feel they, and society, can and is taking meaningful climate action. Finally, students may also disengage with climate change issues if they are perceived as distant and unsolvable (Amel, Manning, Scott & Koger). Inclusion of local problems and solutions demonstrates that climate change issues are both local and actionable. (p. 3)

4.1.4 CHILDHOOD NATURE CONNECTEDNESS

Nature and culture are entwined and embedded in each other. In most childhood studies, the meaning of 'nature' in nature connection depends on where children live. Research shows that nature can have multiple meanings ranging from a city bird, a flower, or a pet, to a fragment of nature in dense urban districts, to wilder areas in forest schools, nature centres and large parks (Chawla, 2020).

Research indicates that emotional connections with nature can potentially shift behaviour toward respect and care for nature and that childhood is the time to begin building this emotional connection (Chawla, 2020; Ives et al., 2018). Emerging research confirms that childhood experiences often motivate later pro-conservation actions (Chawla, 2020). Research also indicates a relationship between feeling connected to nature and carrying out sustainable behaviours (García et al., 2016, as cited by Barrera-Hernandez, 2020) and also between carrying out sustainable behaviours and the happiness of individuals, including children (Corral-Verdugo et al., 2011, as cited by Barrera-Hernandez, 2020). This implies a correlation between nature-connectedness and children's happiness and well-being.

However, it is essential to note the shadow side of nature connection. Chawla (2020) argues that young people's fears and worries about environmental risks and losses also express a strong sense of connection with nature. Children's encounters with nature include hearing about global threats like climate change and species loss while witnessing environmental degradation and destruction in their neighbourhoods and in the media. As they learn about climate change, children's emotions of anxiety, fear, anger, frustration and sadness may be expressions of a deep understanding of their connection to the biosphere.

We also need to consider that not all children's personal and direct experiences with nature are positive. For example, negative nature connections can range from a painful wasp sting to dangerous outdoor experiences in a refugee camp.

Eco-anxiety coping strategies include social trust and constructive hope. Research on children's coping strategies highlights the importance of social trust, of believing that one is not alone in taking action for nature and that individual actions are amplified by other people's contributions (Chawla, 2020).

There is little evidence of research on children's environmental coping strategies. However, there is an emergence of interest in hope as a coping strategy. For example, Li & Monroe (2017) created a measure of climate change hope for adolescents, based on the psychology of hope developed by Snyder (2000), who defines a *positive sense* of hope as a force for action. Hope requires a vision of a possible future, along with awareness of pathways to reach the goal and belief in agency to achieve it. Ojala (2012) defines *constructive hope* as the ability to see something meaningful and promising after encountering a challenging situation. It is based in part on trust in other people working toward the common good and trust in one's own ability to influence problems in a positive direction (Lehtonen et al., 2018; Ojala, 2012; Pihkala, 2020).

4.2 CLIMATE CHANGE EDUCATION (CCE) FOR CHILDREN

4.2.1 CONTEXT

The UN Framework Convention on Climate Change (UNFCCC) views education as key in addressing climate change since education can empower people with the skills, knowledge, values, and attitudes needed for climate action (United Nations, n.d.).

In Canada, Lakehead University and Learning for a Sustainable Future (LSF) completed a comprehensive survey of 3,196 Canadians to establish Canada-wide baseline data reflecting Canadians' knowledge and understanding of climate change, perspectives on risks, and views on the role of schools and climate change education. "The majority (68%) of all respondents agreed that it is the role of schools to educate students about climate change. Two-thirds of Canadians and three-quarters of teachers believe schools should be doing more to educate students about climate change" (Field, Schwartberg, Berger & Gawron, 2020, p.2).

While the field of CCE is still relatively new, research recommends focusing on the social and emotional considerations within which learning occurs. Most CCE to date has focused on students learning scientific facts about climate change, assuming that increased scientific literacy will lead to changed beliefs and behaviors. Evidence suggests, however, that higher levels of scientific knowledge do not automatically change minds or mobilize action, and that even belief in climate change only moderately affects actions (SPEN, 2020). In schools, teaching about climate change usually takes place in the natural science disciplines and is often limited to scientific facts (Monroe, Plate, Oxarart, Bowers & Chaves, 2017; Stevenson, Nicholls & Whithouse, 2017). Communicating messages of fear rather than showcasing real examples for active engagement, this approach has been criticized for contributing to feelings of denial, numbing, and apathy (Norgaard, 2011; Stoknes, 2015). Not surprisingly, research has found that pessimism and hopelessness about climate change and the future, in general, are growing among young people (Ojala 2012).

A systematic literature review conducted in 2019 shows that climate change education for children has been largely ineffective, indicating a need for new ways of making climate change meaningful for children and young people through participatory and arts-based modes of engagement (Rousell & Cutter-Mackenzie-Knowles, 2019). The review shows i) that children and young people's understandings of climate change are generally limited, erroneous and

highly influenced by mass media, and ii) that didactic approaches to climate change education have been largely ineffectual in affecting students' attitudes and behaviour (Rousell & Cutter-Mackenzie-Knowles, 2019).

The massive Fridays for Future youth movement beginning in 2018 signals children's need for positive avenues for understanding and engaging the climate issue. Rousell and Cutter-Mackenzie-Knowle's (2019) review identifies the need for new forms of climate change education using participatory, interdisciplinary, creative, and affect-driven approaches, which to date have been largely missing from the literature. The authors also advocate for research that gives young people both a hand and a voice in addressing the complex implications of climate change in their own communities and environments (Rousell & Cutter-Mackenzie-Knowles, 2019).

4.2.2 REFRAMING CLIMATE CHANGE EDUCATION

Critical reflection on climate change promotes existential questions: What does it mean to be a human? What is the meaning of life? How are we related to ourselves, other people, nature, societies and the global community? (Lehtonen et al., 2018).

The Anthropocene has opened new imaginings in the environmental education community ranging from subjective definitions of climate change to postmodern ecological theories. There is much discourse on the purpose of climate change education but minimal discussion on how to teach it. Climate change is not just a scientific phenomenon. It is a complex socio-scientific issue that demands more than the teaching of content.

Discourse on the purpose of climate change education reveals four themes: i) being fully human, ii) interconnection, iii) coping with uncertainty, and iv) emotional literacy/empathy. The following is a list of possible purpose statements derived from the literature:

i) Being Fully Human: The goal of climate change education is to fully realize our humanity—to think critically about a wide range of global situations (Glasser, 2019).

ii) Interconnection and Well-being: Climate change education aims at increasing awareness of interconnectedness and post-material well-being (Glasser, 2019).

iii) Coping with Uncertainty: Climate change education is about learning in the face of risk, uncertainty and rapid change. Humans have never before been in the situation now confronting the planet and CCE needs to engage students to learn in preparation for an uncertain future (Stevenson, Nicholls & Whitehouse, 2017).

iv) Emotional Literacy and Empathy: Climate change is a hybrid theme essentially founded in uncertainty requiring both intuitive and rational understanding, emotional literacy and empathy to find local solutions to global problems (Lehtonen et al., 2018).

These four themes have emerged across disciplines. However, the reviewed literature on climate change education does not fully answer the research questions without a deeper dive into Indigenous perspectives, Art and Climate.

REVIEW OF RESEARCH QUESTIONS

1. How might existing and emerging knowledge help identify the opportunity space for an arts-based approach to children's climate change education that reflects a more-than-human perspective?

2. How do we best approach the social-emotional dimension of climate change education, through the arts, in the face of childhood eco-anxiety?

4.3 INDIGENOUS PERSPECTIVES

> *It is an intertwining of science, spirit, and story-old stories and new ones that can be medicine for our broken relationship with earth, a pharmacopoeia of healing stories that allow us to imagine a different relationship, in which people and land are good medicine for each other.*
>
> -Robin Wall Kimmerer, *Braiding Sweetgrass*

4.3.1 INDIGENOUS KNOWLEDGE AND DECOLONIZATION

Research suggests we should begin with Indigenous knowledge as the foundation of innovation in climate change education. According to Petzold, Andrews, Hedemann & Postigo, (2020), “Indigenous knowledge refers to the understandings, skills and philosophies of Indigenous peoples, developed through long and multigenerational histories of interactions with the natural world and adapting to highly variable and changing ecological and social conditions including colonisation and globalisation" (p.2). Unfortunately, this knowledge is often neglected in government policy and research. As Beckford, Jacobs, Williams, and Nahdee (2010) state, "This disregard for Indigenous knowledge and contribution to our collective human heritage has led to the destruction of the Land. Indigenous view of the Land is everything that encompasses the Earth, including Land, air, water, non-human world, but also spiritually and culturally infused aspects" (p.2).

Although Indigenous knowledge holds lessons for teaching sustainability behaviour and environmental stewardship in mainstream classrooms, it has largely been overlooked and marginalized in environmental education (Beckford et al., 2010). However, education discourse is beginning to recognize that Indigenous knowledge should be included in mainstream

education to encourage new ways to view and act on climate change. Indigenous perspectives and Indigenous knowledge need to be mobilised in this time of climate crisis in the Anthropocene.

According to Nesterova (2020):

> Incorporation of Indigenous knowledge systems into environmental education and education as a whole, is essential for at least two reasons. First, it can help us to close some gaps in our knowledge about the environment that will enable us to counter the threats to the natural environment. Second, in settler societies like Taiwan, Australia, Aotearoa New Zealand, Canada and others, introduction of Indigenous knowledge into education can support the processes of transitional and historical justice to heal the damage inflicted on Indigenous peoples during colonialism and reconciliation and the building of new, just and equal relationships between Indigenous and non-Indigenous groups. (p. 1051)

In settler societies, environmental education should consider issues of decolonisation, in its curriculum or pedagogy, striving for reconciliation between settler and Indigenous groups. The shared goal should be to counter the colonial legacy and build a shared future that validates and honours Indigenous knowledges, identities and lives (Nesterova & Jackson, 2019).

Innovation in Canadian education must encourage decolonized discourse. Decolonizing education is an essential step toward reconciliation. Supporting and revitalizing Indigenous knowledge and value systems, and, consequently, the sustainability of the environment, will also support justice and reparation towards Indigenous peoples and their Land.

4.3.2 RESILIENCE AND MANAGING CHANGE

Indigenous peoples themselves have long recognized the importance of their knowledge systems for managing change (Petzold et al., 2020). As Adrienne Maree Brown (2017) says:

> Every time I have worked with Indigenous communities that have been able to sustain their cultural practices through the onslaught of colonialism and imperialism, as I listen, I hear emergent strategy -being in right relationship with the natural world, learning from the ways change and resilience happen throughout this entire interconnected complex system. (p. 26)

4.3.3 INTERCONNECTION AND RECIPROCITY

It is only recently that Indigenous peoples have come into view as the guardians of the Earth. Indigenous perspectives, offering sustainable lifestyles, closeness to nature and a belief in the interdependence between living and non-living world, are beginning to be acknowledged as having great significance and value (Beckford et al., 2010). As Beckford et al. (2010) point out, “exposure to Indigenous ways of thinking and interactions with the environment would help non-Indigenous learners see caring for and respecting the natural world as moral obligations.” (p.2)

According to Wall Kimmerer (2013), "The moral covenant of reciprocity calls us to honour our responsibilities for all we have been given, for all we have taken" (p. 384). Reciprocity requires collective responsibility not to take more than one gives back. Reciprocity, meaning the personal and collective shared obligation to the living and nonliving world, is cultivated through learning to relate, care, love, think and feel with others to initiate and lead change (Nesterova & Jackson, 2019). Reciprocity is based on relationships and shared within

communities. Robin Wall Kimmerer (2013) eloquently describes Reciprocity in *Braiding Sweetgrass*:

> We are all bound by a covenant of Reciprocity: plant breath for animal breath, winter and summer, predator and prey, grass and fire, night and day, living and dying. Water knows this, clouds know this. Soil and rocks know they are dancing in a continuous giveaway of making, unmaking, and making again the Earth. (p. 383)

4.3.4 ACCOUNTABILITY AND TRANSPARENCY

Indigenous knowledge should be approached with respect and a determination to be accountable and transparent in order to avoid appropriation and misrepresentation (Nesterova & Jackson, 2019). It is also important to avoid stereotyping and romanticising Indigenous knowledge systems, lives, experiences and identities as static, monolithic, primitive and performative (Beckford et al., 2010). Building trust, establishing relationships and collaborating with Indigenous communities, to develop curriculum and teaching methods that draw on Indigenous knowledge systems and ways of knowing, is vital for respectful and truthful inclusion and representation (Nesterova & Jackson, 2019).

4.3.5 INDIGENOUS ART: BRIDGING NATURE/CULTURE DIVIDE

Learning from Indigenous art practice and collaborating with Indigenous artists is a vital foundation to an arts-based climate change program for children that demonstrates decolonized approaches to environmental advocacy.

Discussion of Indigenous art is beyond the scope of this paper, and requires co-authorship with Indigenous scholars. However, a brief example of how Indigenous art can help bridge the nature/culture divide is evident in Tanya Tagaq's musical style. According to Boercher (2019), "Tagaq's musical style has continually dissolved the boundary between the

human and the non-human through a variety of practices, including manipulating recordings of animals, performing animal-like sounds herself, and visually demonstrating the personhood of animals." (p.6)

4.4 POSTHUMAN PERSPECTIVES

Posthuman perspectives provide insight on i) avoiding romanticized notions of children's nature connection and ii) how interconnection and Kinship consist of dynamic, fluid, agential relationships between all beings and objects.

4.4.1 ENTANGLEMENT

The posthuman perspective of entanglement is helpful to understand more-than-human discourse since it represents interconnection dynamically and fluidly. Entanglement refers to the interdependent and entangled relationships between humans and the 'more-than-human world.' Ecological posthumanism is concerned with the bonds, entanglement and intra-connection between people, plants, animals and objects and how they have agency upon each other, thereby shaping each other. Importantly, this discourse includes all beings and objects, including machines and technology.

Posthumanism is broadly concerned with the questioning of human exceptionalism and the foundational role of 'humanity' as it has been constructed in modernity (Bayne, Herbrechter, Gough, Tirosh-Samuelson & Hof, 2018) Rejecting any clarity of distinction between 'nature' and 'culture', posthumanism works against dualism and the binaries we have tended to draw on to define what it means to be human (Engelmann, 2019). Recently, posthumanist approaches to education sciences have become increasingly present even though they are still marginalized in the field (Bayne et al., 2018). These approaches challenge the anthropocentric stance of recent

educational concepts and are particularly relevant to the climate change conversation (Engelmann, 2019).

At this time of challenging planetary imperatives, environmental education is increasingly called upon to contribute to students' understanding of connectedness. Barad's theory of agential realism provides a way to think about, articulate and engage with connectedness as inherent within the world rather than something we need to create. By considering entanglement as a fundamental state, we understand that separateness is not the original state of being (Engelmann, 2019). This implies an ecological consciousness.

4.4.2 KINSHIP, RESPONSIBILITY AND LOVE

The concept of ‘making kin’ by Haraway describes a process that understands entities other than human beings as equal partners in action and symmetrical parts in networks of agents. Instead of seeing human subjects as the only nodes of power, Haraway describes the social world as a string figure in which different knots are equally important for acting, living and dying together (Haraway, 2016).

The affirmative ethics of interconnectedness fosters a deep understanding of situatedness, relatedness, and Kinship contrary to anthropocentric understandings of ethics. It can be understood as an alternative foundation for learning to love nature—not for the sake of humans, but the sake of all related beings. Instead of love *for* the world, affectionate love *in* the world is not limited to human entities. Haraway suggests making Kin as a practice of gaining agency by relying on the embeddedness of action and the fundamental reliance on the other (Engelmann, 2018). Haraway (2016) claims that the only impulse for Kinship is for the survival of all creatures and the aim for a better future: “We become with each other or not at all” (p.4). Instead of restricting the 'we' to humans, the possible frame of reference is enlarged to everything that is possibly interconnected (Engelmann, 2018).

"Kin is an assembling sort of word" (Haraway, 2016, p. 103). To make Kin is ultimately tied to love in the world as an affirmative action towards all entities. Instead of loving them for *what* they are or for their resources, a posthuman perspective helps us understand love as the attractor and enabler of responsible relationships between all entities. Haraway describes the process of making Kin as relying on stories told differently.

4.4.3 POSTHUMAN CHILDHOOD

Posthumanist approaches seek to disrupt anthropocentric views and support new ways of considering childhood encounters with the more-than-human world. A posthuman approach dismantles the childhood/nature binary.

Malone (2016) argues that "the current fervour for reinserting the child in nature and nature-based education continues to support anthropocentric views and human exceptionalism" (p.3). These sentiments support the perception that humans are not nature, and it is possible for some species, namely humans, to be more or less nature, connected or disconnected from nature, and superior to or dominant over nature (Duhn, Malone & Tesar, 2017).

Malone (2016) identified three key propositions that limit the new nature movement and child- in-nature debate:

1. Children are viewed as outside of nature.
2. Nature is viewed and described as an inanimate object.
3. Childhood is idealized as white middle-class America.

Posthuman perspectives may also help overcome the limitations of a narrow and nostalgic view of 'child and nature' and reimagine a more diverse approach to education for a sustainable future (Malone 2016). Research illustrates that not all childhood encounters with the 'natural world' are as restorative, healthy or spiritually uplifting as the new nature

movement seems to suggest (Hordyk et al., 2014 as cited by Malone, 2016). New approaches would also consider children's existing beliefs and meanings of nature as well as children's accessibility to it.

4.4.4 EXPERIMENTATION

More-than-human styles of working place an onus on experimentation and taking risks. This represents an opportunity to push educational possibility boundaries and critically explore what it means to be 'connected' (Bayne et al., 2018).

4.5 LEARNING IN, WITH, AND THROUGH THE ARTS

> *What the warming world needs now is art, sweet art.*
>
> -Bill McKibben

There is a need for further research to better understand the contributions of teaching climate change in, with, and through the arts and its applicability in diverse school, community and online settings. As Bentz (2020) states:

> There is evidence of opportunity to create links between disciplines to support meaning-making, create new images, and metaphors and bring in a wider solution space for climate change. Going beyond the stereotypes of art as communication and mainstream climate change education, it offers artists, teachers, facilitators, and

researchers a wider portfolio for climate change engagement that makes use of the multiple potentials. (p.3)

4.5.1 CONNECTIONS AND KINSHIP WITH THE MORE-THAN-HUMAN WORLD

There is an increasing interest in place-based nature connection and children. However, there is a lack of research specifically designed to understand better how to build children's nature connection to the point of Kinship with the more-than-human world in ways that support children emotionally. For example, what does Kinship mean to children? Is Kinship innate to young children, and should educators be safeguarding this intuitive knowledge?

After a thorough review of the literature, there appears to be no existing research on the mitigation of childhood eco-anxiety in a Canadian school or community setting. However, research is emerging on new pathways through imagination, mindfulness and sensory experiences. Embodied knowledge and learning through the senses could present opportunities in arts-based programs or head/heart/hand approaches to climate change education.

Importantly, research in this space requires Indigenous perspective, partnership and collaboration.

4.5.2 CO-CREATION OF KNOWLEDGE

Given the research and knowledge gap on i) children's personal meanings and feelings about climate change and ii) how to teach climate change to children, there is a significant need for further research using participatory methods. Findings indicate potential for an arts-based approach with children and their teachers as co-researchers to gain new knowledge about children's attitudes and beliefs as well as the possibility of participatory co-creation of climate change programs with children (Rousell & Cutter-Mackenzie-Knowles, 2019).

Scholars agree that what makes art a unique contributor to transformational education is its freedom to pursue open-ended explorations of any topic through an ever-expanding set of practices not limited to finished outcomes or solutions (Galafassi, Tàbara, & Heras, 2018). New understanding and embodied knowledge can be generated through the integration of multiple ways of knowing and engaging and eliciting more-than-rational, non-reductive knowledge and experiences (Galafassi et al., 2018). Therefore, artistic practice can co-produce new knowledge and transdisciplinary learning.

4.5.3 EMBRACING COMPLEXITY AND BUILDING RESILIENCY

Participatory art is an appropriate response to Stevenson's definition of climate change education. According to Stevenson (2017), "climate change education involves creatively preparing children and young people for a rapidly changing, uncertain, risky and possibly dangerous future" (p.1). Transformative learning through art can contribute to greater engagement with the process of change through experience, exploration, dialogue, and reflection. Art practice can develop open-mindedness and agility, thereby developing necessary change management skills. Climate change education can be described in two parts: climate and change. 'Climate' involves the natural sciences, while 'change', or educating for change, involves engaging the social sciences and humanities (McKeown and Hopkins, 2010 as cited by Stevenson, 2017).

Artistic practices introduce a unique way of embracing social-ecological complexity. This includes the ability to engage with uncertainty and to trace how society and nature are intertwined in ways that open up alternative modes of relations to nature (Heinrichs & Kagan, 2019). Art can also embrace the complexities associated with dissonant values and behaviours, often identified as barriers to more climate-friendly ways of living (Stoknes, 2015).

4.5.4 EMOTIONS AND DEEPER MEANING-MAKING

Research shows that we need to tell new stories about climate change. For example, Haraway describes the process of making Kin as relying on stories told differently (Haraway, 2016), meaning that the narrative on climate change needs to change. Children can help co-create and tell these new stories, their own stories, through art including dance, theatre, storytelling, music, digital art, video and other art forms. For example, art can be used as a process to discover, deepen and embody personal meanings of climate change through a variety of art forms. Artists can support reflection and more profound meaning-making while seeking to include the emotional aspects of climate change. This supports what some scholars view as the role of schools and the role of art, namely to create spaces of possibilities or laboratories of the future where young people engage in creative and experiential ways to deal with questions of socio-ecological change through connection to everyday experiences in addition to their own personal experiences; thereby shaping not only individual but also shared desires for potential futures (Dieleman, 2012; Kagan, 2015). This aligns with an education praxis that accounts for the importance of personal experience in generating agency by creatively identifying problems and solutions through reflection, which in turn produces an appropriate course of action (Bentz, 2020).

Art has multiple potentials for climate change education, including its capacity to engage emotions and to expand imaginaries of the future to create hope, responsibility and care, as well as healing. It is important to provide space, time, and resources for children to express their feelings, especially the painful ones, about nature connections and climate change through art. Crucial to the issue of childhood eco-anxiety, further research is required to determine if art can attend to and transform emotions, creating positive emotions such as hope, responsibility, care and solidarity in order to activate a desire to engage and contribute to alternative futures. As such, art can extend climate change engagement toward an affective, personal experience,

creating a force that can help close the gap between what children know and what children can do about climate change (Galafassi et al., 2018). According to Lehtonen et al. (2018), "Arts can transform apathy and grief into joy and empowerment and bridge the gap between theory and practice."

4.5.5 IMAGINATION AND CREATIVE PROBLEM SOLVING

> *We can register what is happening with satellite and scientific instruments,*
> *but can we register it in our imaginations,*
> *the most sensitive of all our devices?*
>
> -Bill Mckibben

There is some discourse in the arts sector that the climate change crisis represents a crisis of the imagination. Discourse in the science community also talks about the need for imagination, specifically, ecological and technological imagination. Both point to the imagination as a possible solution to climate change.

Unleashing children's imagination is fundamental to 'learning through art' since it is co-creational, transdisciplinary, open-ended and process-oriented. Open-ended exploration through art, without limitations of finished outcomes, can fuel a child's imagination. An imaginative approach as well as approaches designed to encourage imagination can serve as a powerful means of expanding future imaginaries and developing new scenarios of transformative change (Galafassi et al., 2018). Imagination is also key to building empathy for people and the planet.

4.5.6 EMPATHY

Arts' aim at widening perspectives, seeing things differently and exploring alternatives aligns with the challenge of climate action. Transformations and transformative learning can take place on many levels during artistic processes (Lehtonen, et al., 2018). For example, when participatory art is used to challenge the norms of roles and identities, the idea of normality itself transforms. Individual perspectives can transform when enriched through dialogue and encounters with other people and their context (Lehtonen et al., 2018).

Making art can positively impact identity construction, self-consciousness, and the cultivation of empathy for others. Empathy and creative thinking are needed to understand the world in its multiplicity. In the aesthetic world of art, especially in drama, participants put one's soul into other people's experiences allowing them to try out different conditions in different contexts (Lehtonen et al., 2018). For example, in theatre creation, children can imagine the role and personality of others in the more-than-human world, including people, plants, animals, water, rocks, and other sentient beings.

4.5.7 HOPE, COURAGE AND TRUST THROUGH COLLECTIVE ACTION

There is power in collective action for change. Social trust is essential for children tackling the complex issues of climate change. It is important to have trusted others, including adults, learning and working alongside children. Dialogical learning situations offer open encounters where adults and young people learn from each other and together construct pathways for a sustainable future where humanity is fully realized. Hope, courage and trust are strengthened through embodied, shared experiences (Lehtonen, 2020).

4.5.8 COLLABORATION AND CONNECTION

Creative participatory approaches reinforce the skills of cooperation and collaboration on a local and potentially global scale. While research indicates that a local and personalized approach is best suited to young children (Monroe et al., 2017), global connections cannot be ignored.

CHAPTER 5: DISCUSSION OF FINDINGS

Review of Research Questions:

1. How might existing and emerging knowledge help identify the opportunity space for an arts-based approach to children's climate change education that reflects a more-than-human perspective?

2. How do we best approach the social-emotional dimension of climate change education, through the arts, in the face of childhood eco-anxiety?

Key findings from the literature review are synthesized into six emerging themes:

5.1 Mitigation of Childhood Eco-anxiety

5.2 Reframing Climate change Education for Children

5.3 Indigenous perspectives of Interconnection, Reciprocity, Resilience

5.4 Posthuman lens on entanglement and Kinship

5.5 Kinship

5.6 Art-based approaches offer Multiple Potentials to Climate Change Education

5.1 MITIGATION OF CHILDHOOD ECO-ANXIETY

> *This is all wrong. I shouldn't be up here.*
>
> - Greta Thunberg, *UN Climate Action Summit*

The climate crisis and its effect on children's well-being are both urgent matters. Findings from the literature review indicate that i) childhood eco-anxiety is an emerging and serious concern and ii) there is increasing awareness of childhood eco-anxiety in the context of climate change education. However, there is a lack of evidence on climate change educational programs specifically designed to mitigate childhood eco-anxiety. This represents a significant opportunity to design children's climate change educational programs with eco-anxiety in mind (and in the heart).

Given the research and knowledge gap on i) children's meanings and feelings about climate change and ii) about how to teach climate change to children, there is a significant need for further research, using participatory methods. Research indicates potential for an arts-based approach with children and their teachers as co-researchers to gain new knowledge about children's attitudes and beliefs as well as the possibility of participatory co-creation of climate change programs with children (Rousell & Cutter-Mackenzie-Knowles, 2019).

There is growing interest in reconnecting children to nature as a pro-conservation strategy. However, some research indicates that this nature connection may in fact be causing eco-anxiety as children bear witness to environmental destruction and biodiversity loss through personal experience and media saturation (Rousell & Cutter-Mackenzie-Knowles, 2019).

5.2 REFRAMING CLIMATE CHANGE EDUCATION FOR CHILDREN

We are only human in contact and conviviality, with what is not human.

-David Abram, *The Spell of the Sensuous*

Findings indicate that reframing climate change education and clearly defining its purpose, should align with future thinking on education, in general. Educational futures based on 'learning to become *with* the world' offer an aspirational vision for the increased ecological consciousness that is seemingly necessary for future human survival. Learning to become *with* the world reflects a much-needed paradigm shift from anthropocentric to ecocentric education, creating new meaning for *being human* through interconnection with the more-than-human world. Because educational institutions, policy and curriculum are slow to change, findings show that immediate, emergent strategies are the best way forward, rather than waiting for paradigm shifts.

Climate change education can be used as an emergent strategy for educational transformation. There are indications that some educators are experimenting with emergence in their personal and collective practice in attempts to move forward on climate change education with urgency.

Education is recognized as a key to climate action; however, findings show no clear directive for innovation in climate change education beyond the commonly used, rational science-based approach. Emerging evidence suggests that rational, top-down methods are generally ineffective, and there is much greater potential for creative and participatory

approaches. The potential for education is everywhere: schools, families, communities, parks, museums, online, theatres, social media, etc.

There is no clear consensus on the purpose of climate change education. However, scholarly discourse indicates a range of directions for climate change education: education for i) climate justice (social and ecological justice) ii) resiliency in a complex world iii) constructive hope or iv) interconnection/reciprocity.

5.3 INDIGENOUS PERSPECTIVES OF INTERCONNECTION, RECIPROCITY AND RESILIENCY

> *The moral covenant of reciprocity calls us*
> *to honour our responsibilities*
> *for all we have been given,*
> *for all we have taken.*
>
> -Robin Wall Kimmerer, *Braiding Sweetgrass*

Findings indicate a need to better understand more-than-human connections and reciprocal relations *from a child's perspective, with an Indigenous lens*. There is a clear opportunity for Indigenous knowledge to serve as the foundation of children's climate change

education given Indigenous lived experience, spiritual beliefs, and knowledge about interconnection, reciprocity, resiliency, and collective responsibility.

Regarding resiliency, Indigenous peoples themselves have long recognized the importance of their knowledge systems for managing change (Petzold et al., 2020).

Findings show that Indigenous perspectives best reflect a more-than-human approach and that collaboration with Indigenous partners is essential in the development of climate change programs for children for two reasons: i) to close knowledge gaps on interconnection, reciprocity and resilience and ii) to support reconciliation and decolonization (Beckford et al., 2010).

Indigenous perspectives aligned with more-than-human perspectives refer to all beings' essence and spiritual life, including humans, animals, water, wind, soil, etc. Collaboration and co-creation with Indigenous partners is essential to ensure meaningful engagement with Indigenous knowledge, move toward reconciliation and prevent appropriation of Indigenous culture.

5.4 POSTHUMAN LENS ON ENTANGLEMENT AND KINSHIP

> *Kin is an assembling sort of word.*
>
> -Haraway

A posthuman lens replaces the nature/culture dichotomy with the entanglement of people, animals, plants and objects (including machines). Posthuman perspectives could help

prevent romanticized ‘back to nature' approaches by offering new insights into an urban child's entangled reality. There is an emergence of posthuman perspectives on climate change education, particularly in early childhood environmental education.

5.5 KINSHIP

Educational futures, Indigenous knowledge and postmodern perspectives point to the concept of Kinship as a profound expression of interconnection that could serve as direction for children's climate change education. However, there is a lack of research on *how* to teach/learn Kinship in ways that support children emotionally. Findings show that different ways of knowing need to be considered. For example, intuitive, emotional and embodied knowing through the senses are all possible pathways to Kinship. Indigenous partnerships and Indigenous knowledge can also help with this understanding. Kinship could help mitigate eco-anxiety through a sense of connection, belonging and well-being.

Further research is required to better understand new pathways to Kinship, belonging and well-being through imagination, mindfulness and sensory experiences. Embodied knowledge and learning through the senses might present opportunities for arts-based programs with head/heart/hand approaches.

5.6 MULTIPLE POTENTIALS OF AN ARTS-BASED APPROACH

There has been a disconnect between our clever brains and our hearts.
- Jane Goodall

We need new climate change stories. Haraway (2016) describes "the process of making kin as relying on stories told differently." Findings show that arts-based approaches can help create and tell these new climate change stories, support meaning-making and bring in a more expansive solutions space for climate change through:

i) imagination (builds hope and empathy for the more-than-human world)

ii) emotional dimension of climate change (enables the expression of feelings)

iii) embracing complexity and uncertainty

iv) open-ended, creative problem solving

v) collaboration and collective action (on a local and potentially global scale)

CHAPTER 6: ROUGH SKETCH OF ARTS-BASED CCE FRAMEWORK BASED ON FINDINGS

This research indicates that reciprocity could define meaningful climate action from a child's perspective. The action of 'give and take' through an Indigenous lens could help reinforce positive connections with the more-than-human world, in the spirit of Kinship. The climate action of reciprocity offers potential in the mitigation of eco-anxiety through belonging and hope while promoting pro-conservation behaviour. Robin Wall Kimmerer's (2013) beautiful narrative on reciprocity offers inspiration:

> Reciprocity requires collective responsibility to not take more than you give back. Reciprocity, meaning the personal and collective shared obligation to the living and nonliving world, is developed from learning to feel, think, relate, care and love with others to initiate and lead change. Reciprocity is based on relationships and shared within communities. (p.384).

Other meaningful climate actions include: imagining, loving, and collaborating. In addition, the action of making Kinship represents action that children can 'do' while acquiring the embodied, intuitive and emotional knowledge necessary for a deep and positive understanding of their interconnection with the more-than-human world.

The UN Framework Convention on Climate Change (UNFCCC) views education as a critical agent in addressing the issue of climate change since it is is crucial to promote climate action, by helping people understand and address the impacts of the climate crisis, and empowering them with the *knowledge*, *skills*, *values* and *attitudes* needed to act as agents of change (United Nations, n.d.).

Research indicates that an arts-based approach is the best fit for this type of climate action. Findings provide enough insight for a rough sketch of an Art-based Climate Change Education framework, based on Kinship through reciprocity. This framework serves as a discussion starter for Indigenous and non-Indigenous artists and educators, offering inspiration for collaboration.

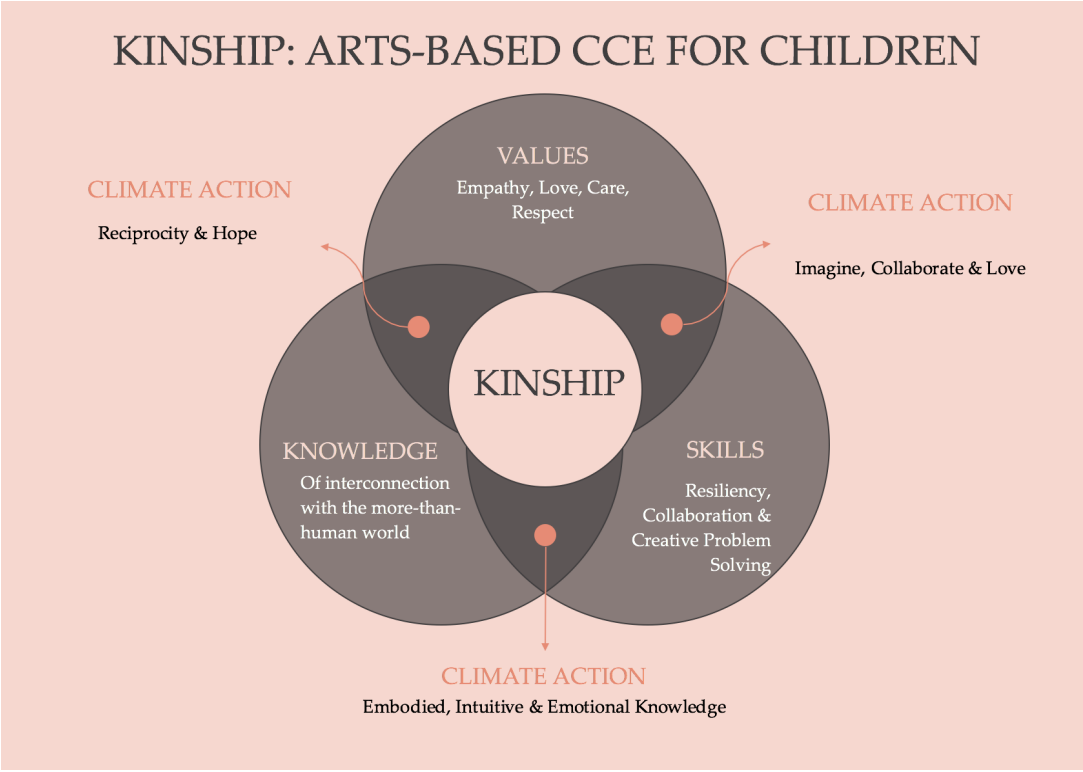
Rough Sketch: Arts-based CCE framework based on Kinship through Reciprocity

Knowledge: Embodied, Emotional and Intuitive knowledge of Interconnectedness with the more-than-human world

Skills: Resiliency, Creative Problem Solving, Imagination, Collaboration

Values: Empathy, Love, Care, Respect, Kinship

Action: Reciprocity (give and take), Hope



CHAPTER 7: CONCLUSIONS AND IMPLICATIONS

Forests are trees holding hands underground.

-Jeffrey Campbell

7.1 CONCLUSIONS AND CONTRIBUTIONS

The global climate crisis and its effect on children's well-being are both urgent matters. The entire world needs to collaborate, 'holding hands', working toward climate solutions while 'learning to become with the world'.

Although climate action programs in schools are designed to empower children to become changemakers themselves, there is emerging concern amongst educators about childhood eco-anxiety. It seems that the more we increase children's awareness through education and media saturation about climate change and biodiversity loss, the more we risk fueling eco-fear. There has been very little research on children's feelings about climate change and this new responsibility of childhood to advocate for their own survival.

This paper offers strong evidence for a new form of climate change education that is based on values and creative skills rather than simply knowledge. It identifies the value of connection, empathy and Kinship between humans and the more-than-human world. Research indicates that the action of making Kinship through reciprocity could help mitigate childhood eco-anxiety. This approach requires collaboration with Indigenous partners for deeper understanding.

Findings suggest that the purpose of climate change education could be reframed as education for social and ecological justice through a practice of love, care and Kinship with other humans and the more-than-human world. Emergent strategies and small actions inspired by this purpose will help begin the larger paradigm shift toward desired education futures; education in the right relationship with the world.

This research indicates that an arts-based approach or learning through the arts offers significant potential in climate change education. An arts approach can navigate the nuances of a complex world and unleash expression of the emotional dimension to the climate crisis, including love and Kinship, through the practice of imagination and creative problem-solving in collaboration with others. Indigenous knowledge and partnership in climate change educational practice is fundamental to a decolonized, arts-based approach aiming for deep knowledge, skills and values related to the more-than human world.

Research is required to better understand children's existing attitudes and beliefs about climate change, followed by research to determine children's emotional response to new arts-based approaches. Participatory research and co-creation with Indigenous and non-Indigenous artists, educators and children offer significant potential for program design with eco-anxiety in mind (and in heart).

7.2 IMPLICATIONS

Climate change is a global problem. Global human and non-human interconnections constitute the climate change crisis, and real climate solutions will likely require global unity from a political, economic and social perspective. This research, however, is based on emergent strategies; small actions and local action to support the personal and emotional lives of young children while building momentum for climate action.

Educators, artists, and children are being called to urgent climate action in the spirit of Kinship. It is time for urgent experimentation and iteration of creative and participatory approaches to climate change education and new ways to show accountability for impact.

Given the recent emergence of climate change education in the global north, there is an opportunity for the Canadian arts community to play a vital role in children's climate change education in schools, in the community, online, in the media and elsewhere. Arts intervention is particularly well-timed here in Canada, as the arts community is currently poised to restructure itself for post-pandemic climate action.

This research indicates that innovation in climate change education must take a decolonized approach, partnering Indigenous and non-Indigienous artists and educators, in the creative journey of research and co-creation through an Indigenous lens.

This research paper serves as context for collaboration between artists and key partners on opportunities for innovative arts-based climate change educational programs, providing a rough sketch of a CCE framework to serve as a discussion starter in order to begin the research and design process.

This research also suggests that further qualitative research is specifically required to better understand how children make their own personalized, localized meanings around nature

connection and climate change. In the school setting, this research should be creative and participatory with children, teachers and artists as co-researchers and co-creators of relevant and meaningful programs from a child's perspective.

The findings from this research also serve as possible inspiration for teachers' and parents' individual and collective practice. Urgent and emergent strategies, from everyone, can help move us 'to learn to become with the world'. This paper indicates that Kinship's sense of responsibility and belonging could move us along this pathway while mitigating childhood eco-anxiety.

We need to start trying new ways of being human now. For our children.

I invite you to share with me the joy trees can bring.

-Peter Wohlleben, The Hidden Life of Trees

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