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Nature Education for Sustainable Todays and Tomorrows (NEST): Hatching a New Culture in Schooling

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Abstract Within the North American public education system, institutionalised structures of schooling often prevent teachers from aligning their values with their practice when it comes to environmental education (Bowers, 1997; Weston, 2004). In response to this, this article will outline our lived experiences, as teachers and researcher, in disrupting the traditional school system as we work toward building a new culture in schooling through nature-based education. Acts of disruption that we will speak to include: going outside for learning on a regular basis, teaching for empowerment, involving families in the education, attempts to play with structural confines of schooling, and finding ways to stay empowered ourselves. Through this work, we have found that there is a rippling effect to the disruption that requires courage, grit, and resilience such that we do not slide back into conventional approaches. We have also become empowered in our practices through implementing these changes, watching our students become active stewards within their communities and beyond. We are learning deeply about the work of structural change within a public school district and offer words here as inspiration and support for others wishing to make changes within their own context.

Within the current education system there is a deeply embedded culture around what schooling should look like and entail (Bowers, 1997). As other theorists have outlined, traditional structures of schooling within North America treat the more-than-human[1] world as the setting or background for learning or see environmental education as an 'add-on' to the curriculum (Blenkinsop, 2012; Orr, 1994; Weston, 2004). Often, industrialised, hierarchical, competitive and individualised structures at the heart of public schooling are antithetical to the work of ecological education. This means that teachers can end up teaching messages that are counter to their own values despite their best intentions. Given this, our work as teachers and as a researcher is to disrupt the established school system in many ways and work toward building a new culture in

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schooling through nature-based education. In doing so, we have found that there is a rippling effect to the disruption that must be met with courage, grit and resilience so that we do not slide back into conventional approaches. Through this work we have also become empowered in our practices and seek to embolden our students and their families to become active stewards within their communities and the planet. We recognise that this is a foundational goal for environmental educators everywhere and used this as a base out of which to grow our vision.

Within this article, we will describe how disruption, as well as cultural and school-system level change, have become a central part of the public elementary school where we research and work. We hope to first share our thoughts on why this is necessary and then outline ways in which we are trying to disrupt established approaches to schooling. This has been messy and complex, so for each disruption we will detail challenges that have arisen as a result of this work, and our hopes and visions for where we would still like to go.

On Disruption

In 2013, an elementary school principal faced declining enrolment at her school of some 45 K–7 students and decided the time was right to introduce a separate choice program alongside the school's more traditionally styled indoor classrooms. Tapping into her own passion for the more-than-human world and recognising the ideal location of the school — meadow, forest, creek, estuary, parks and beach all within walking distance of little feet — she devised Nature Primary (NP). The intent was to teach the British Columbia (BC) curriculum through the lens of nature and in so doing, 'grow children with green hearts and green minds'. In its first year, NP boosted the school population by 38 K–3 children and had on reserve a hefty waiting list for the school's new offering. A year later, with the stubborn and optimistic determination that their program would include intermediate children, the NP staff renamed the program NEST, an acronym for Nature Education for Sustainable Todays and Tomorrows. Currently in its fifth year, NEST spans all elementary grades (K–7), and its four classes are at capacity with 90 students in total, comprising slightly more than half the whole school population. It is intentional that new intakes generally come from kindergarten and, with so many interested families, admission to the program is lottery-style — with the exception of those children grandmothered in because of siblings already in the program. Some 50 families still wait hopefully on a list.

NEST provides hands-on experiential learning opportunities for children in both the outdoor and indoor classrooms that they explore. Programming is rooted in the cultures and context of the more-than-human world where learning is happening. NEST honours the BC curriculum and its guidelines for primary/early intermediate learning using inquiry-, place-, play- and child-centred learning as its core foundations. Children, most often in multi-age groupings, and nature guide the lesson planning, as the class will often find themselves digging deeply into learning in the various outdoor locations. NEST aims to educate children, their families, and those whose lives they touch in ways that deepen their understanding and caring for the more-than-human world. This underscores the hope that if they know more about the natural world, experience curiosity about it and grow understanding, then they will fundamentally care for it. This will not be true for everyone, but we believe it is a responsibility in this time of ecological crises to offer the potential for this deeper level of care for the earth. Our hope is that the children's stewardship will be thoughtful and intentional, if not a reflex nurtured by the fabric of their education.

To accomplish this, change away from the more conventional ways of educating children (e.g., single teacher, students at their desks in the classroom, teacher-led

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occasional fieldtrips, textbooks, workbooks, smartboards, predictable breaks tied to the bell schedule) is necessary. In NEST, we necessarily have to break out of the structures that typically bind a teacher's work. Our 'disruptions' of typical approaches to schooling are central to our discussion here, as NEST pokes insistently at the walls of schooling to allow community, place and the more-than-human world to act as co-teachers.

Disruption is defined by the Oxford English Dictionary (2018) as a 'disturbance or problems which interrupt an event, activity or process'. For our purposes at NEST, we aim to move away from negative associations around this term and instead see it as opening up potential, clearing room and making pathways for positive change, and so reframing disruption as enlarging the possible:

> *I dwell in Possibility —*
> *A fairer House than Prose —*
> *More numerous of Windows —*
> *Superior — for Doors — (Dickinson, 1951)*

In this article, we do at times acknowledge that we are collectively pushing against the current educational system, but we are more intentionally trying to frame our actions and drive for change as a positive and generative force. At the heart of this change is a desire to strengthen and deepen our relationships with the more-than-human world. We believe that being and learning outside allows for different ways of knowing and being that simply cannot happen within a classroom alone, as we will share below. This work of disruption in pursuit of meaningful reconnection with the more-than-human world means questioning and disrupting dominant Western cultural norms that counter this (e.g., that humans are separate from and superior to the natural world or that the natural world is a setting or backdrop for learning rather than a focus for it). This is what we mean when we refer to the need for 'cultural change'. The hope is to open up the 'rule book' and explore new possibilities for enhancing learning and relationships. These norms are also embedded in the structure of the school itself, so this also necessitates school-level change (Blenkinsop & Creeping Snowberry, 2010).

Disruption comes in the form of a constant vigilance to avoid being pulled back into conventional approaches to schooling and as a push for autonomy as a separate program, and thus permission to do things differently. We are an unconventional program attached to an already existing school in a regular schooling system. As a result of this juxtaposition, there is a persistent rub as the unconventionality of our program is often met with misunderstanding and misconceptions by those at arms length to our philosophy and practice. Traditional school structures are often framed by contractual rules and obligations, in addition to schedules, embedded not only with activities but with expectations, both spoken and unspoken — work as mortar in the walls we are trying to break down. This challenges us to continually think about who we are, who we want to be, and why. The necessity to be ever ready to articulate our pedagogical perspective makes us acutely present to the disruptions we have and continue to pose for ourselves and our professional community. It makes the question 'What is the purpose of this program?' critically important. We must always return to this question because in the answer is our foundation, without which we risk getting lost, even pulled back to traditional approaches. This leads us to want to disrupt conventional ways of approaching public education within the current school system. Alongside this, it is important to be empowering ourselves as educators, students, principal and support staff to make these meaningful and important changes in public education.

This article is based on ongoing conversations between the three of us as authors, where Laura Piersol, the educational researcher, spent time asking Jenny Groves and Linda Russell, the two founding teachers at NEST, what they have learned around this

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topic of disruption. Our ideas here are phenomenological in nature, based on our lived experience at the school. Let us further introduce ourselves and how we situate ourselves in relation to this work.

Laura Piersol has been teaching for 20 years as an ecological educator and has been involved in NEST since its inception as a researcher through Simon Fraser University. Initially, she was struck and inspired by the ambition of the principal, Sally Thicke, and her determination to bring change to the public education system, as Laura is interested in how education might work as an agent for cultural change. Laura was also involved in researching and starting The Maple Ridge Environmental School, another public elementary school (K–7) that is place-based and ecologically focused.

Jenny Groves has been playing in the magic and the mud of our planetary landscapes her whole life. Her teaching career began in alternative education in outdoor settings and that has filled her heart and worked her body and brain throughout her career. Marrying her love of alternative education and the more-than-human world with the public education system (where the majority of children spend their days) was a dream come true.

Linda Russell, a once aspiring marine biologist at university, became swayed by her passion for teaching and did so in traditional elementary classroom structures for 20-plus years. There were lots of exciting and eyebrow-raising camp-outs and field trips in caves and badlands, and she could not not recognise from these how connecting to 'place' in learning deepened the learning experience as well as the relationship between student and teacher and family. If this was when learning went deepest, why relegate it to several times a year? Imagine if everyday learning was rooted in 'place' and a child became more accustomed to learning in and from her natural surroundings, such as a tidal zone or forest, than from a four-walled classroom?

Our Thoughts on the Work of Disruption

Teacher 1, Linda

> *Laura, you say that disruption and cultural change are a central part of the purpose of our work in NEST. But, truthfully, the idea of our work as 'disruption', while clearly felt by me these last years, is not how I had ever articulated it for myself, so confronting this word now as the big tree in the meadow has me standing back to consider it a little more mindfully. My reason for exploring Nature Primary at its inception was from a knowing that learning could and must be better — more relevant, more important and more impactful for our children and the planet. To have Nature be my co-teacher, to be right out there with children amongst the firs and cedars or competing with the sounds of waves and eagles at the beach — is, in my opinion, the way to achieve this. Naively, maybe, it never occurred to me, in the early stages, that what I was doing was a 'disruption' or even effecting a cultural change within the broader school culture. I was so occupied reflecting and recreating myself from being an experienced teacher with familiar ways of doing things, to becoming an inexperienced co-teacher with Nature. I regarded negative reactions to or comments about NP as annoyances that I had put down to ignorance. I absolutely did not at that time nod wisely thinking 'aha, this is the discomfort of disruption that precedes all meaningful change' … I understand it better now. I accept that NP, now NEST, just as it disrupted my own ways of thinking about my teaching practice, is a disruptive force on so very many other levels — in our local and broader cultures of education, and in our community. But, I'd like to qualify that because, as we stated above, I don't believe disruption is necessarily negative — either for the*

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doer or for those in its ripple. There are times I have blithely lived with the status quo until someone made a bold change to it and I found myself thinking, 'I can't believe this hasn't happened sooner — it's so much better.' Or, I've wished someone would make a change to 'this or that' because, though it is due, I can't quite figure out how to do it myself. I think there has been a little bit of this happening in our ripple and it has helped to place some of our disruptions more positively. As we share in this article, a number of the disruptions that have occurred in our evolution as a program have been viewed by families and some in our district as welcome ones. The plethora of popularised research by people like Richard Louv around the need to have children outdoors and the positive impacts on their development of self, hasn't hurt. Our superintendent, many trustees, principals at our school, and certainly families have extended themselves with their own thinking, creativity, and commitment to supporting some of our 'disruptive' ideas and practices — be it allowing our program to grow thoughtfully with our input as teachers, trusting us to effectively deliver the curriculum in our natural spaces, assisting with safety protocols taking our children off the school site for most of the day, or, significantly, allowing us to eliminate the use of scales in all forms of assessments.

Teacher 2, Jenny

Interestingly, I leapt at the idea of disrupting the traditional systems of public education. I felt like the time was ripe (and still do) for school to offer choice to children and families in their educational journey. Again, like my colleague above, I did not see this disruption in a negative light but rather one that could disrupt what we know to be true of school and celebrated for its uniqueness and ability to offer choice in public education. To be able to focus learning for children in their home place and the more-than-human world they are a part of seemed a logical and progressive step for me in education. The disruption felt natural, timely and like it would be embraced by the community as a step towards systemic change, shedding some of the things that we now know do not work for children, school and the planet in the 21st century. Where the pieces of the disruption landed were (and still are) surprising for me. Five years into our programming, the dust has not yet settled and we still continue to disrupt in unexpected ways in our district, with and without intention. I have learned through this experience that when one sets out to disrupt something, even with the most positive intentions in mind, there can be fallouts one will not expect.

Researcher, Laura

Having been involved in starting and researching a public elementary school in another school district, I came into this work at NP, cautious and aware of the many, many complexities of this work and how they would likely rock the boat at all levels, although I was keenly aware that there was no way to fully anticipate how these waves of disruption would roll out. Despite this I found myself instinctively trying to protect administration, staff and community by passing on any lessons I had learned from my work at the previous school in hopes that some would help them weather the changes. My research at NEST has since made me realise all the various levels of support that need to be in place if true change is to be supported and allowed to flourish. So, while we each have come into this work with different understandings around the role of disruption, we have collectively come to understand the importance of this work

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> *in creating a new path to schooling. In this time of ecological crises, we believe that it is essential and urgent for ourselves and our students (the future human generations of this planet) to take seriously the need to reconnect with the more-than-human. Below, we have begun to articulate five key acts of disruption in action that we feel are essential in creating a new culture in public education that is oriented towards ecological care and stewardship.*

Acts of Disruption in Action

Being Outside of the Classroom is Essential to Nurture Care for the Planet

> *… it is not half so important to know as to feel when introducing a young child to the natural world. If facts are the seeds that later produce knowledge and wisdom, then the emotions and the impressions of the senses are the fertile soil in which the seeds must grow. The years of early childhood are the time to prepare the soil. (Rachel Carson, 1965, p. 58)*

Imagine learning about bears: In the typical four-walled classroom, bears can be studied any time of year because the resources are always available — maybe a projector to show some images or video, access to computer information and readers, a special guest who has worked with bears, a field trip to a zoo. This is what learning about a bear in most classrooms would look like. Imagine now sitting on a field surrounded by trees, a creek and estuary spilling into the ocean alongside. It is fall, smoky, musky scented leaves are transitioning to red, yellow, brown and beginning to carpet the heavily dewed grass. The conifers are even more prominent on the edges of the clearing. To get to the gathering place for a story and snack, it is necessary for the children and teachers to step over bear scat. Clearly, this bear had been feasting on fallen apples from the nearby grove, unperturbed by their wormholes. Other scat shows seedy signs of late blackberries. Storytime is delayed because of all the conversation about the bear visit overnight. Local food sources are pointed out and investigated. The apples are too wormy for us! Over at the nearby creek, pink salmon are running — so, lots of reasons for the bear to be hanging out here this time of year. And so the study is initiated, so it is ensued — honed to nature's rhythm, with senses alive and seasonal relevance. The dewy surroundings, laced with webs, littered with cones and hazelnuts, the cries of eagles and bickering gulls actually making it hard to hear the story being read, which is about bears or the teaching of other words with bear's 'ear' sound. For all these 'classroom' challenges and 'distractions', this field in this place is nothing short of authentic, and the connections to place and learning made by the children have tapped into every sensory organ they possess. They sit, play, and learn in the very place frequented by the bear in that same season, smelling the same smells, hearing the same wild calls, touching the same cold water, tasting the same berries, feeling the same leaves and sticks and cones underfoot, witnessing the same struggling sun. To be sure, along with guest speakers, bear skulls, books, video, and computer information are accessed to round out our exploration and learning. But nothing will compare in the sparking of wonder and curiosity, of meaning, understanding, and knowing to that offered to us by the place itself. To teach within nature, to teach through such connections and relationships, we have found that there is no substitute for actually being there. The offering to our senses that a lived experience provides can engage over 30 senses versus the two senses that are working when watching with a screen (R. Louv, personal communication, March 13, 2018). Within our work, there is a desire to shift from learning solely about or in place to what we might learn from the natural world, asking ourselves 'how might it act as a co-teacher?' (see Blenkinsop & Piersol, 2013; Styres, 2011). For us, this has meant that teaching often comes in the form of facilitation or guiding the connections and the

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wonderings that are happening in and offered by the place itself. A big piece of this is knowing the stories of the community, especially Shíshálh (local First Nation on whose land we teach) knowledge that was born from this land. We learn so much by connecting with the land itself, wondering about it, and witnessing changes in nature over the year. Jardine (2006) emphasises the importance of this work: 'Knowing something in an integrated way requires the time to return; perhaps again and again and again, now from this direction, now that. An ecologically considerate response requires time for consideration' (p. 175). This helps students and ourselves to feel we are part of a place and to learn to recognise what part we play.

This requires a type of humility and a sense that we need to spend time listening and attending to the small details of place repeatedly over time on multiple visits over the course of a year so that as educators and students we are attempting to shift from knowing the place to caring about it. Like David Sobel (1996), who suggests we 'allow [children] to love the earth before we ask them to save it' (p. 27), we believe it is important to begin by facilitating the students' wonderings and encouraging their focus to notice. As educators, we find it is essential to take the time to really look at what the students care about and are being drawn to in the place, as well as drawing their eye to things that might not be as obvious or understandable yet. Recently, we had jellyfish come up on shore for the first time at a beach that we go to weekly with the students. Some of the students have been coming to this beach with us on this regular basis for three years now so it was very exciting and new to see hundreds of these creatures on this day. The amazing thing about the depth of the learning that happens when kids are learning in place and have this intimate understanding of their surroundings is that they know that jellies do not come up on that beach very often, so they were ecstatic — screaming, joyous, touching, and wondering: 'How are they here?' and 'What kind are they?' There was only one lion's mane and hundreds of other moon jellies, so another question that came up was: 'Which ones can you touch and which ones can't you?' It was an exceptionally low tide, the lowest tide we had experienced in this place, a regular haunt, and they were seeing creatures we had not seen there before — urchins, anemones and sand dollars, and other little eel-like fish and full, huge clams. They were eyes-wide-open the entire time, just chattering about it: 'Look at this! Look at this!' We share this to illustrate that with time and returning to a place over the seasons and years such that they know it as their own backyard, there is a whole new layer of learning that can and does happen. Because the students are there all the time, there is a heightened awareness of when there is a shift and a parallel understanding that the place is dynamic, always changing, and that we can observe what those changes are. We want this as teachers. We want children to be observers noticing what is and what changes. We want them to be wondering why and asking questions. Why indeed are we and scientists seeing more jellies than ever? What could cause that? We thought we knew this beach, but look what the lower tide has uncovered? What else don't we know? This ability to pick up on the subtle understandings of place is part and parcel of developing that deep connection with it (Leopold, 1949). As we are able to spend repeated time in this place, we notice how it is continually evolving, and there is a sense from the children of how it provides ongoing mystery, engagement and wonder as a result.

As teachers, we feel the joy alongside the children and also experience the wonders and the learnings. On this particular visit, we could not actually 'see' the anemones — most of their bodies were buried in the sand — but we could see the rings of shell bits attached to their tentacles and so we began to notice these ring patterns in the sand. 'What is that?' 'What are those rings?' First exploring by touching them and feeling them squish, it became a thing to get your finger kissed by putting it right inside so

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it would squirt and suction to your finger. Watching the wonder and the learning happen is so joyful. We became kids too. These offerings for learning, these provocations for imagination, wonder, joy and care that are borne out of an ever-evolving ecosystem simply cannot happen in a static classroom (Weston, 2004).

This shift from learning inside a walled classroom to learning outside in place acts to nest education within relationships and context with the more-than-human world itself as a teacher. We have found that building deep connections to the more-than-human world goes so much more beyond 'I learned to multiply today' or that 'I learned what the parts of an insect are and have labelled them in this cute cricket booklet'. The children can be taught the parts and characteristics of an insect in any classroom, but when actually out learning to observe and to hold those insects respectfully, learning about their environments and their place in that world — actually choosing to build cricket habitats during free play — the children are learning about them in relationship to themselves, in relationship to other creatures, in relationship to season and weather, and their learning becomes much bigger at this point. We absolutely do make cute little cricket books, but they are not just a presentation of what the children were taught about crickets, they are a sharing of some of what they have experienced and themselves discovered about crickets. Leopold (1949) points out this is really a shift from seeing our species as 'conqueror' of place to 'plain citizen and member of it' (p. 203). This requires spending time on the land and being 'landfull' (Baker, 2005). This shift to go outside, then, on a regular basis necessitates many other shifts or disruptions, as the structured time blocks in a typical school day do not allow for the time and repeat visits needed to develop this care and understanding of place. Yet, as illustrated above with the example of our study bears, the place itself generates lessons that simply cannot occur in the classroom, ones that are filled with wonder, spark imagination and joy, give a deep sense of the subtleties of place, and are necessary for learning to know and care for the natural world.

Teaching for Resiliency and Empowerment

> *Those who contemplate the beauty of the earth find reserves of strength that will endure as long as life lasts. (Rachel Carson, 1965, p. 88)*

From our experience, a necessary part of this education is to gain resilience, a sense of empowerment, and also a deep love and connection for the planet that we hope will embody itself in the ways the students will choose to live their lives. In this time of ecological crises, doing this work is an ecological imperative for the human race. Ehrlich elaborates: 'In pushing other species to extinction, humanity is busy sawing off the limb on which it perches' (as cited in Kolbert, p. 268). There is a need to teach for resilience (the ability to adapt to changing or difficult conditions), to impart a sense of efficacy and deep-rooted self-knowledge that they do have power as an individual or as a cooperative. In this time of heightened awareness and understanding of the human impact on our global environments and climate, it is so important that children know this. The school gardens and now a greenhouse that we work to maintain and plant are examples of tools we use to develop this sense of efficacy. The gardens teach us about our food and how to grow it sustainably, healthfully and joyfully. Our students have joined local community organisations to transplant native eel grasses to beachside banks whose own grasses have been destroyed, and have participated in massive plantings of native species to maintain the integrity of the creekside banks in the places that we regularly visit. Several times a year, we organise days where we focus on pulling invasive species like English ivy and holly from our learning spaces. The children have successfully eradicated most of the Scotch broom from around our school playground. So

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now, every time we return to our outdoor spaces of learning, the children see the revitalising transformations of their own actions. Bell (2001) describes the importance of this work:

> *… habitat restoration provided tangible places and storied spaces where affinities for their fellow beings could flourish. Through [participant] involvement they became attuned to the living world in ways that the lawn-and-asphalt landscaping more typical of schoolyards simply will not allow. Such attunement entailed a caring engagement with the rhythm and unfolding of a particular place. It added a depth of feeling and commitment not accessible through indoor, print-centered approaches to learning which so often cast relationships within the more-than-human world in terms of distance, detachment, abstraction, and control. (p. 152)*

We see this empowerment and education happening at home as well. Parents and grandparents have expressed their delight and appreciation that their child is bringing them into their learning in ways that they simply had not experienced with their other children schooled in traditional learning settings. They recount how on forest walks their child, speaking knowledgeably to the dangers posed for native plants, has stopped to pull up wandering ivy or to uproot tiny holly saplings. They also remark that they love the conversation at the dinner table where their child, volunteers ('with no prodding!') what they learned about poison amanitas, frog eggs, the alevin buttoning-up, or the chicks hatching. We often hear 'I just love the way my kid is a teacher for our family'. These interactions in which the child is educator are central to inspiring earth care in others, and this imparting of knowledge seems to begin with those with whom one is closest — friends and family. This aligns with other findings that have shown how children within environmental education programs can have a positive and educative influence on their families as a result (Evans, Gill, & Marchant, 2010; Vaughan, Gack, Solorazano, & Robert, 2003).

This ripple effect, which is exactly what the NEST school strives for, extends out into the community as well. There is continuous reporting of 'wow moments' in which a student has said something to a community member that includes their scientific knowledge or understanding about something that is happening in nature. For example, one day at the beach we met another class from another school on a field trip. One of these children picked up a tidal pool creature to show their teacher — a nearby student from our school piped up to say 'Oh, you found an isopod'. The teacher from the other school remarked on their use of scientific language and also on the ethics the NEST children were embodying and sharing with her group: 'Oh, when you are holding the crab, you can't keep it out of water for very long because …'. Care for the earth becomes alive in these students. We witness this through their actions as passionate teachers and advocates of the more-than-human world and as they educate a community of people beyond what even they realise. And at age six. We believe that all of this comes together as an essential disruption as the students are empowered to use their senses of observation to build their own perspectives and ideas. Such autonomy of thought and behaviour is important to foster so they have the confidence and strength to make shifts toward ecological consciousness in a society where it is undervalued. Curthoys (2007) describes the importance of developing such ecological literacy as 'the ability to act on behalf of the cultural and ecological integrity of one's … home places' (p. 69), a skill essential in the time of ecological crises.

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Creating Deeper and Wider Connection to Families in Recognition of the Difference Between Schooling and Education

Another disruption to regular approaches to schooling has been fostering a deeper and wider reach to bring families into their children's learning at school. Our families tell us that far from feeling like outsiders, they feel like an important piece of the learning community. We feel like this is a positive path forward in terms of disrupting traditional forms of education where parents are not typically as fully included. As teachers, we want to honour this, and we are present to the relationships that are enriched by inviting parents and grandparents into the learning as co-teachers. We invite families to come into our indoor/outdoor classrooms to share their skills, talents, and knowledge. From a Heiltsuk artist dad who demonstrated the drum he made and sang the songs of his clan, as well as teaching us the cultural significance of these, to a grandmother who led us in weaving bark of cedar roots, and to a beekeeping mother who shared the story of her hive — and its demise — we are intentional about colouring the learning experiences in NEST with the histories, stories and passions of families involved. At the end of each year we have one of our NESTivals (an event or activity in which all NEST classes participate) and a NEST family campout where we almost entirely hand over the days' activities to parents and other family members to organise and lead: belly dancing, Pilates, yoga, salve and balm making, fishing, drama, pottery, weaving, interpretive forest walks, arts and crafts, and so on. Each year the list grows and so does excitement and engagement — by parents and children. We want to impress upon our families that by collaboratively acting as a learning community, we are modelling and fostering understanding in the children that learning — education — happens outside of school hours and school structures, and that we are all educators and learners, all the time (Dewey, 1944). This is not a new philosophy, but it is not always practised consistently or in depth. We feel there is great importance in shifting away from idea that 'teacher knows best' — a phrase and concept we feel is a big part of the traditional culture of school, and perhaps one of the biggest ways that we are changing our own micro public schooling experience. By stepping back as educators from always being the 'sage on the stage' and instead being the 'guide to the side', we are allowing space for kids and parents to be experts and for us to be learning collectively. This ties into the students feeling empowered and supported by wider communities. It also helps students and their families realise and validate the learning/teaching that comes from all the different directions in their lives, including from the more-than-human. By emphasising the importance of learning that happens outside of school we also hope to encourage families to consider the work of reconnecting with the natural world, not just as something that happens in school alone, but also to think of how they collectively might do that work in their own lives as a family unit.

Extending invitations is one thing, creating inviting structures to promote educating and celebrating learning with family is another. The Wonderwalk is one such NEST structure and a disruption to traditional reporting norms. It happens twice a year at two of the traditional reporting times — specifically, when most teachers typically conduct 10-minute parent interviews to discuss the learning of their child — late fall and early spring. In NEST, we encourage our parents to meet with us at any time they have a concern or are wondering about their child's learning, wishing to dissipate the feeling one needs to wait until 'interview time' when, often, it is very late to be addressing serious concerns. As for sharing, demonstrating, and celebrating each child's learning, we thought we could come up with something richer and more meaningful than the standard 10-minute interview. This took the form of the Wonderwalk, a student-led educational stroll and exposé through one of NEST's outdoor learning spaces.

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Typically, it is hosted by the forest or by the creek in fall, and by the beach in spring. On the Wonderwalk, the children lead their families or an invited community member through a series of stations set up to allow the children to share and demonstrate some of their learnings that season. A station might be about using the Fibonacci sequence to make or identify patterns, demonstrating the scientific classification of animals, making VENN comparisons of dolphins and porpoises, reconstructing a sea-lion skeleton, dramatising photosynthesis, sketching one of the creatures or plants studied that season, or leading parents and grandparents on a sensory journey. Rather than a teacher-telling-parents about their child's learning, the parents can see and experience for themselves the things their child has learned and retained, what they can read, write, explain, compare, synthesise, story, manipulate, extrapolate. In this way, the children speak for themselves and show their own learning. The Wonderwalk generally takes 1½–2 hours to complete; it happens rain, wind, snow or shine, and is either preceded or followed by a perusal of the child's portfolio-to-date in a dry space. The portfolio, a more traditional collection of art, writing and research, goes home at the end of the year as a summative keepsake.

The Wonderwalk is a disruption to the reporting norm that was enthusiastically welcomed by our principal in our very first year. Not only were we encouraged as teachers to think beyond the box when faced with the issues of assessment and reporting, but she actively engaged in supporting our plan and ability to *act* beyond the box. She allowed us the freedom to be out in our outdoor spaces to set up the stations while she occupied the children and led them to us at the start of the event. She invited school trustees, the superintendent and other school district staff to partake in the Wonderwalk, led by children who may not have had a parent able to be present. In this way, all the children were able to feel the pride of sharing their knowledge, and skills and to be celebrated — not just by their families, but by the broader community. And in this way, folks at the school district office who work on behalf of these children but do not normally get the opportunities to experience their joy in learning were also welcomed into the community-fold as partners and as learners/educators. The Wonderwalk remains a disruption wholeheartedly embraced by our superintendent and ensuing principals at our school. We see it as a positive force for change that was only possible because of their support. The program also has a gradeless reporting system that we feel is essential in helping to look at the whole child. Early on, the parent community often had to take a leap of faith and to trust us as educators on assessment and reporting because it looked different to what they had ever seen before.

A new tradition this year also was a 'Learning Exhibit' at the midway point in our school year, where families were invited to take the lead on assessing how their children were making progress in our Circles of Care (self-growth, growth in community, and connection to the natural world). Through reflective writing from the parents and students as well as a collaborative art piece, we celebrated how children have grown in their skills and sensibilities, and the importance of the family connection to learning and the school community. Having families come in for the Learning Exhibit meant that the children were sitting on parents laps and being cuddled while communicating their thoughts on their learning at school. Studies have shown that caregivers who nurture and cuddle their children while reading reinforce the children's feelings of being loved and supported, thus helping them become stronger readers (Bergin, 2001; Bingham, 2007). It is important to imagine that there must be transference of this skill building with caregiver support to other learning areas. When the child feels loved and supported by the people who care about them the most then that learning is deepened.

Payne (2005) points to a gap in the literature of environmental education, indicating there is a 'paucity of information about how the home acts as a site for environmental

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education' (pp. 81–82). We are aware of the importance of families being involved in their children's learning as a way to offer deeper or extended learning for the child. Part of our work as teachers is to recognise that there are often boxes around learning at school and a separate box around learning at home, and then to find ways to break down those walls and allow there to be cross-pollination. We try to find ways for parents to come to learning events and we look for ways, beyond dinner-table talk, for the student learning to come home. Home inquiries are one of the ways NEST does this. We acknowledge and encourage kids to be active after school in passion activities and learning, whether it is soccer, dance, Aikido, art classes or swimming lessons. As educators, we believe it is enough that we ask our children to read with their family each night. And so, home inquiries, unlike 'homework', are optional and merely an invitation to parents to share in and foster wonder in their child by becoming more connected to their child's learning, engaging in their child's learning experience to strengthen it, and to show their child that learning at school is wholly relevant and applicable to real life. A home inquiry might look like finding out a few interesting facts about toads or doing an audit of the family garden for bee-friendly flowers. It might invite an exploration of their kitchen cupboard or backyard to find seeds, or to find a plant from which to extract a natural dye to share with the class. Some families do all of the inquiries, some most, but everyone does at least a couple. The children learn about being lifelong learners because they start to recognise that there are no walls to education. We also feel like this is substantial shift as it brings the caregiver fully alongside as a co-learner and inquirer in the learning and makes nature education not just a subject to be studied but actively embedded in the day-to-day of these family's lives.

Our hope is that the creation of NEST as a choice program gives parents an opportunity to have their child experience education in a way they that feel will be relevant, healthy, and meaningful. The waiting lists attest to a desire in the parent community to participate in this unique programming. However, we wondered, 'Does everyone bring to the idea of "Nature Education" the same expectations and understandings?' Before the beginning of our first year, we asked the parents of newly enrolled children to write us, the teachers, a letter. To write this letter, they were asked to imagine that their child had just completed a year in NEST and to describe the ways in which their child had grown and come to be in themselves and their world. They were asked to highlight their child's learnings and experiences that they most valued as parents. We wanted the parents to be intentional about their choice to join and to think about what the program may be offering them. Reading these letters allowed our principal and us as teachers and researcher to identify the shared values and hopes families were entrusting to this program that was still in its inception. By and large, they wrote about the values and character they wished to be nurtured in their child, for them to be human beings rooted in place and person. We typically had not heard this before as the question is not often asked. As educators, we take the parent perspective seriously and aim to make the space for collective visioning as we search for ways to best support the development of their children, with the common goal of deeply rooted care for the earth.

In the spring of our first year, we invited our families to a 'visioning' session in which we endeavoured to learn whether and how we were meeting the expectations and hopes expressed to us in their letters. We were curious as to what they saw as next steps because the following year would see us move from being a primary program to one that included intermediate grades as well. This spring evening has since become a NEST parent-teacher sharing and visioning tradition. We come together to share the successes, the stories, the hopes for next steps, things we could build upon, let go of, consider. While it is our responsibility as teachers to make the pedagogical choices in our teaching, we believe in the importance of informing our choices with the ideals and

aspirations of our parents. If we are to be serious about being partners in their child's education, we need to understand the histories, stories and values parents attach to it. Parents take a leap of faith by coming into this choice program that is NEST, and we need them to know they made the right choice for their child. By fostering relationships with the families and being present to who *they* are we hope to give them lots of opportunities for understanding who we are, what we do, and why. We agree that while we have started this work of disrupting conventional approaches in order to create deeper and wider connection to families, we think we need to do more of it and that we can improve upon it.

Pushing Back on Confines of Conventional Time Structures, Bells, Schedules, and Prep Time

We often forget that the infrastructure of school is pedagogical in itself in many ways. The structures, signs and symbols of school life teach and communicate their own messages (Blenkinsop & Creeping Snowberry, 2010). You have the school calendar, the hours of instruction, and everything you learn has to be within that time; then you have recess and lunch and the assemblies and all the special events. Often, we have wondered what it would be like to do something in the evening, whether it is to gather to watch a meteor shower or to observe and celebrate the solstice. We can always do these things, but it is not the school structure or culture. So, we are trying to create a new culture of how school could be by breaking away from the one that is. We have learned that having the new culture and the current one live side by side is a challenge.

Currently, when we go outside we don't always come back in time for bells, most often missing morning recess and arriving back to the school grounds part way into the lunch hour. We try to follow the learning and the teachable moments that are offered in our outdoor classrooms. As we mentioned above, we feel that this type of disruption in the time structure of the day is necessary for creating that connection to place. There is a real push–pull for us between attending the 'school-wide' events or activities (e.g., recorder concerts, special guests, school assemblies … there is always something calling us back) scheduled during or in between traditional lesson times and the deep learning that is happening in our natural classrooms. There are all sorts of parameters around schooling that still include assumptions and the spoken and unspoken expectations alluded to earlier: if we don't stay 'in' to come to other school events then we may be perceived as unsupportive or aloof. If we don't go out, we feel like we are not attending to the learning and places that embody the integrity of our program (e.g., the salmon may not be running tomorrow as they are in this moment). This is a constant struggle in defining ourselves as a unique program and maintaining positive relationships with those involved in the traditional program also offered out of our school.

The shift in opening up a greater block of teaching time by moving through the recess and/or lunch hour eliminates time that teachers generally get to regroup, prepare, breathe, go to the washroom. This is definitely a disruption to the norm of school teaching. That time, which can be quite the gift for a teacher, is traded in for the opportunity to add greater depth to learning and lessons for students outdoors. Being outside to learn and restructuring the traditional learning times are two of the major disruptions that have created ripples for the other teachers within the district.

Issues around time are ever present as we collaborate to prepare and teach lessons in a co-teaching model. Our combined multi-aged groups (typically a 3–4 grade span) spend most of the learning day together outside. Our collaboration necessitates meeting twice a week in a structured sit-down time, but there are also so many other sidelines of conversations and communicating that need to happen so we can ensure our

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programming is running smoothly. Even in our fifth year, the amount of time required (beyond what we once needed as teachers teaching our own class in a single room) to design and implement a program with little in the way of model to inform, is more than either of us had imagined. There are no textbooks to follow and few guides to direct us. We invent outdoor games to reinforce the concepts addressed, and we figure out how we are going to teach an engaging and effective spelling lesson in the field without the tools and resources of a classroom at our fingertips. In a sense, part of the disruption of our practice has been to our own lives by committing to a role that requires a whole other layer in terms of planning for teaching outside, planning a parallel 'indoor' plan if weather shifts unfavourably, and co-teaching. This means that as sustainability educators, we teach about sustainability but are not always capable of practising it for ourselves; as we design new curriculum/structures/culture, it is difficult to turn work 'off' and remember to focus on self-care and our lives outside of school.

Staying Resilient and Courageous With Negative Disruptions and Learning to Educate the Wider Community

While we were indeed intentionally trying to disrupt a number of traditional schooling structures (noted above), in order to make the nature and place-based aspect of our program work there were, however, disruptions felt by our school and district colleagues, that the two teacher authors in this article did not anticipate. The disruption for some of our colleagues, principals new to our school and other schools, and even our own union, created the need for numerous conversations to dispel myths and misconceptions about the program that we are developing. In this article thus far, we have been looking at disruption from a positive angle. We knew we might create some ripples as we moved our ideas forward, but the force and scope of the negative reactions were a surprise to the teacher authors here. We wonder if maybe that is just part of what a disruption is? One cannot control where all the pieces fall. Nevertheless, out of this we did realise that there is a continuous need to revisit with colleagues because our teaching philosophy does challenge the accepted cultural norms of what makes a school — from fixed schedules for breaks, bells to mark beginnings and endings, indoor classrooms, desks, grades, and parent-teacher interviews — to a differing view of parent engagement and involvement. Each of our explorations and experiments with what can be has been assumed by some to be an affront to what is, which has never been our intention.

By trying to create this shift in education, it is creating disruption for others, sometimes significantly so, and there is a lot of community education that is having to emerge out of it. As mentioned, for the teachers writing here, there was an unexpectedness to this. We thought that our roles as educators would be solely to teach our children and families connected to them. Instead, there has been lots of advocacy for ourselves, the program, and what we do. We find ourselves continuously having to preserve, protect, grow, and strengthen ourselves. Nature teaches resilience, and we have to be resilient to continue to do what we do. There is a shift within our school: a shift in school culture, in pedagogical culture, and in collegial culture. Something that has been clear throughout all these attempts to shift the schooling is that communication and education as to why and how these shifts are happening is essential. Parents especially need to hear our understandings around what we are doing and why we are doing it and be kept up to speed on what is being disrupted and why, otherwise the disruption can feel scary and cause anxiety.

One of the most important things to think about in the process of creating these shifts in culture is how to bring new staff into the NP. We are very much still learning in this regard but here are some thoughts in relation to this so far. This year we

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increased our numbers by one primary class and one staff member. We found that we had just as many meetings as before yet it has felt less collaborative. It felt as though we were spending more time trying to catch up on what each other was doing rather than collaborating together. With more teaching partners, different teaching styles come into play and create often unpredictable dynamics. We have experienced how hard it is for teaching staff new to our program to find their rhythm alongside existing staff who have already developed a style and relationship for the teaching and have had the luxury of being there at the start to shape and grow this newly forming culture of NEST — a culture that is forming out of our own personal desires to deconstruct and reconstruct some of the traditional elements of school. It has been hard on everyone when there is newness to team, and so far we have had four new teachers step into the program. It seems to have been a challenge for some new staff to walk into a culture that is already well under way because they are inheriting children who are already ingrained in this new culture and its rules. This is tricky, because many of the undertones of the culture are hard to explain unless experienced. It has also been hard for the staff who have grown and created the new culture because of the time needed to continually educate and explain these shifts.

We have found that the original staff got to ask 'How are we going to go about this?', whereas a lot of the new staff have instead been asking 'What am I supposed to do?' There has been a feeling of less freedom to create something new and understand things differently, as the foundation is already in place. So, the new staff are asking 'What is this foundation and is there room for me to grow the foundation? Is there room for me to add something new?' And, of course, the answer is yes; but our own question is 'How do we bring new people in, support them, and yet maintain some of the foundational NEST culture that cradles our philosophical integrity?' Part of the approach here has been to create space and time for collective visioning and to revisit the foundations of the program, something all of us have benefitted from: 'What are our pillars?' 'Where are we going?' 'What is fundamental in our teaching?' 'Is there something we can let go of?' Going back to reflect and rethink is an essential strategy as we grow. A key part of this is to express our personal understandings and expectations, because each of us comes to the table with our own ideas of what it means to be teaching in this program. In fact, it is important that we are explicit that the two teacher contributors to this article represent only two of the four teachers in our program.

We are aware of the large scope and challenge of this work of disrupting the conventional culture of the school system. It often feels really huge. We have been surprised by the grit and resilience it has created in us because we have had to challenge so many disruptions that we have ourselves purposefully created by shifting our teaching and classrooms in ways we know are different, and ones unwittingly created by the reactions to these shifts. It requires patience on our part, and faith, to have the research, evidence and experience backing up our convictions of the profound impact of nature and place-based education for children, but not to have the much-needed supporting structures confidently and firmly in place. Still, we gain strength and momentum through glimpses into the empowerment and stewardship that is at the heart of what we are doing.

Conclusion

Through the process of writing this article, we have realised how differently we viewed and understood this program and its purpose when we first came into this work. However, interestingly enough, we now collectively realise and agree that acts of disruption, both intentional and not, are central in trying to shift toward a type of schooling that empowers students to be stewards on this planet. Through going outside regularly for

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the learning, teaching for resilience, reaching out to families as teachers, attempting to play with structural confines of conventional schooling, communicating our lessons learned to the greater teaching community, and learning ways to stay empowered ourselves, we are learning deeply about what it means to try to enact structural change in a school district. It is incredibly exciting at times, very emotionally draining at others, and overall, complex work. Yet, given the urgency of current ecological crises, connecting youth with the planet and helping them to see themselves as change agents is the very work we need to be doing within public education.

The time crunch that comes with trying to change practices of schooling sometimes means that we are not able to communicate the lessons we are learning to the greater educational community, even though we are frequently being asked to do so. We found this in writing this article itself, as we ran out of time to elaborate on other important disruptions (e.g., the importance of multi-age, inquiry and play-based learning; efforts to support the professional development of teachers elsewhere who, in trying to effect similar shifts in their school cultures, are requesting our guidance; and the practice of co-teaching in terms of shifting culture), given the challenge of finding time to write on top of preparatory time for teaching and taking care of self and family. Yet, it is essential that we try because the writing itself is an essential act of disruption — the need to document and communicate these attempts at change is essential if we are to collectively try to bring environmental education in more meaningful ways into the public education system. So, this article in itself has become an active form of resistance to the systemic pressures that eat away time and thus our ability to share what we are learning. To write this article, we garnered time through cracks in our days. We suggest this metaphor as a way to frame a path forward: thinking of the work of disruption as a seeking of those cracks of light in one's practice that may open up the walls of schooling such that the natural world is able to crawl right into it.

Endnote

[1] We use the term 'more-than-human' within this article to refer to the elements of the earth independent of human creation.

Keywords: systems, teacher development, school, processes, politics, place, environmental education

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Author Biographies

Laura Piersol works within unceded Coast Salish territory on the west coast of Canada. She teaches in masters' degree and graduate diploma programs at Simon Fraser University, with a focus on Nature-based Experiential Education. She has been involved in starting and researching two ecologically focused public elementary schools in Canada and is interested in education as an agent for ecologically conscious cultural change.

Linda Russell is a once-aspiring marine biologist at university who bowed to her passion for teaching and did so in traditional elementary classroom structures for 20-plus years. To be sure, there were lots of exciting and eyebrow-raising camp-outs and fieldtrips in caves and badlands, but she could not not recognise from these how connecting to 'place' in learning deepened the learning experience as well as the relationship between student and teacher and family. The opportunity to be a part of creating a place-based nature school program in a public elementary school was, simply, wow to her, and she leapt.

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Jenny Groves realised early in adulthood that she just could not stop mucking about outdoors. After a degree in Outdoor Recreation at Lakehead University and then a Bachelor of Education in Outdoor and Experiential Education from Queen's University, Jenny dived in to her passion areas in teacher. Her diverse career in educational organisations has forayed through the fields of nature, social justice and advocacy, sustainability, alternative models of learning, individual inquiry, intercultural education, leadership, and social and ecological responsibility. In public education, Jenny has landed in the NEST and could not be happier. Here on the edge of a new way of teaching, her professional passions merge.

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