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UNIVERSITY OF NORTHERN COLORADO

Greeley, Colorado

The Graduate School

SHIFTING SANDS: THE ART OF ECOLOGICAL PLACE-BASED EDUCATION

A Dissertation Submitted in Partial Fulfillment of
The Requirements for the Degree of
Doctor of Education

Emily Christine Bretl

College of Education and Behavioral Sciences
School of Teacher Education
Educational Studies

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Entitled: *Shifting Sands: The Art of Ecological Place-based Education*

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ABSTRACT

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Ecological place-based education is defined by the inextricable overlap of the places where society, politics, culture, and the environment meet in intricate and interdependent ways. It encompasses the development of the skills, knowledge, understanding, and characteristics that we need to live well on this earth and with one another. This research observed and evaluated the experiences, expectations, and practices of three traditionally minded teachers and the participant-researcher as they encountered and implemented ecological place-based education for the first time, in a new school. I used the methodology of educational criticism and connoisseurship, and I applied an ecological aesthetic framework to the analysis and interpretation. This study explored the experience of creating an ecological school and focused on the art and craft of the educators through an ecological aesthetic lens and Eisner's school ecology. Of particular interest were the participants' intentions and expectations in their roles, as well as how they were or were not realized within their teaching practice. Participants' intentions illuminated themes of hopeful vision, holistic learning, and responsive action; imaginative diligence, open-hearted connection, and deliberate spontaneity emerged as expressions of teaching artistry in action. The import of using magical realism within educational criticism was also examined with a focus on improving education. The implication could influence teacher preparation and professional development programs. In particular, the findings suggest a need to meet teachers where they are with regards to developing educators' knowledge of place, ecological mindedness and understanding, and celebrating their personal professional growth, no matter how small. Additionally, recommendations are offered with regards to institutional and educational design to support ecological place-based education across the curriculum.

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CRITICAL PROLOGUE

This is Where It Starts

Here I am, I think to myself, once again trying to find my way in an unfamiliar land. I may have grown up in the sandy dunes of the Midwest, but I have never experienced a vastness like the Middle Eastern desert stretching out before me. Sand dunes rise and fall in peaks and valleys as far as the eye can see, white and salty at my feet, but gold and glittering further off. There is no breeze where I stand, but I watch grains of sand float and dance off the dune crests in the distance. At first it seems as if nothing is moving, as if I am the only living soul here where the desert meets the city. Then I see the telltale tracks of a dung beetle stitching its way across the landscape, and there – are those fox prints cutting a straight line across the lot? My ears focus in on the drone on cars speeding down the highway, and a bulldozer starts up nearby with a beep and a rumble. The call to prayer cuts through the early morning quiet, the soothing voice a welcome, if unfamiliar, addition to my days. I don't hear any birds, but I know they must be out there, just waiting for the dawn to raise them from their rest. I notice the buildings silhouetted tall behind me, their lights twinkling silver and gold against a purple sky. I imagine the turquoise blue of the gulf waters gently lapping at the shore in the distance, the green sea grasses waving silently towards the surface as sunlight starts to trickle in. A fragrance both metallic and perfumed wafts through the air, from the minerals of the earth and someone's sweetly spiced oud cologne. *Here I am*, I think again, nervously, excitedly, wondering who I will meet first, where we will go, and what we will create together. The adventure is about to begin. This is where it starts.

I always tell the teachers I work with that the first thing to do in ecological place-based education is start where you are (Sobel, 2005). We ecological educators must strive to remain curious; there is adventure to be had within the learning, for the students, yes, but especially for the teacher (Gruenewald, 2002). Where you stand, where you walk, where you live, where you work: all these places are as significant as they are insignificant. The ground beneath our feet, like the world in which we live, is easy to overlook, to move over in a haze of inattention. What is familiar often goes unnoticed and therefore is left unattended. Taking an ecological view of education asks teachers to stop and look around, to learn to really see and hear, to know the places they call home. This shift in perspective is grounding for some, unsettling for others. As for me, my eyes and ears have long been trained on the earth and all that grows up, down, and around this planet, our home. As an environmental scientist and educator, I have been unable to let go of this curiosity and love for the world, so instead I have worked instinctively to incorporate it into all of my teaching. When I first read the words of David Orr (2004) stating, “All education is environmental education,” I exhaled a breath I didn’t know I was holding, finding footing on a theoretical foundation on which I could build a personal philosophy of education. Over my years in education, I have held many different positions: environmental educator, instructional coach, curriculum designer, classroom teacher, resource specialist, all with a focus on sustainability and ecological education. Most recently I found myself in the role of Director of Education for Sustainability, designing curriculum and teaching teachers to “do” project-based learning through an ecological, place-based framework. This complementary curriculum of sorts was meant to spark their imagination and sensibilities without demanding an explicit commitment to environmentalism (Moroye, 2007), though that may be an unspoken intention of mine or more emotionally, a hope.

Perhaps it is understandable that, upon landing in Desert City, I was more than a little excited, and slightly daunted. In this unfamiliar city I was the founding Director of Education for Sustainability at a new international school dedicated to ecological literacy, sustainability, and environmental justice. My job, succinctly put, was to ensure that the entire curriculum was infused with the ecological: from conceptual understanding to play in the outdoors, from creative expression to action and stewardship. I took on the role of guiding teachers in creating the sense of wonder Rachel Carson so eloquently described (1965) while being equally responsible for developing in students and teachers the ecological literacy David Orr outlined about almost three decades ago (1992). This would have been a massive undertaking in the best conditions, with experienced ecological educators who are comfortable with the concept of place-based education, or at the very least comfortable in the place they teach and call home. Reimagine the situation, swapping “experienced” with novice, “ecological” with traditional, and “comfortable with” for incredibly new to, undoubtedly ungrounded in, and quite likely overwhelmed by, and the project’s enormity soars to a new level. The teachers at Desert School (pseudonym) arrived on campus with little background in ecological education. Most were fresh off the plane in a foreign land. In the Fall of 2019, the school was in its inaugural year, and our routines and traditions, let alone our reputation, were untested, even non-existent. The ground beneath our feet changed daily, forcing each of us to seek balance and find steady footing on shifting sands. This study was an exploration into the experience of creating an ecological school from the ground up in a dynamic and challenging landscape. In particular, I focused on the art and craft of the educators who nurtured the vision and mission of the school to life, day by day throughout our first year and just beyond. Back then, I stood poised at the beginning, wondering what the journey would bring. Now, I weave the tales of that lived adventure, while still another quest stretches far out front of me, calling me back to the trail. But for the moment, this is where I stand, in this place, with this story. Here is where I start. Go.

CHAPTER I

INTRODUCTION

Climate Change

We are living in a time of great ecological disruption, evidenced by unprecedented shifts in climate and weather patterns, ocean temperatures, the extent of sea ice, migratory cycles, and resource availability, to name only a few changes (Rich, 2018; Wilson, 2002). There is agreement among the majority of the world's scientists that the cause of these shifts is "extremely likely" linked to human activities (Intergovernmental Panel on Climate Change [IPCC], 2015). For decades there have been multiple calls made, by individuals and intergovernmental organizations alike, for education that develops citizens capable of participating in decision making, collaboration, and mitigation efforts to address the challenges brought about by these ecological changes, now and in the future (Louv, 2005; Orr, 1992; United Nations Educational, Scientific and Cultural Organization [UNESCO], 1978; United Nations [UN], 2017; Wilson, 2002). As these voices have made clear, it is not just any sort of education that will do, but one that is grounded in place, ecology, and imagination of what is possible (Orr, 2004). This will need to be an education that cultivates our "intellect, hands, and heart" in ways that inspire us to nurture rather than destroy life (Orr, 1992, p. 137). I believe this time of great ecological disruption brings with it an urgency for shifting paradigms in education to focus on deepening our connection to the places in which we dwell, and developing the skills, knowledge, and ethos of ecological literacy (Orr, 1992), ecological mindedness (Moroye, 2007; Moroye & Ingman, 2013), and a sense of wonder, imagination, and hope (Carson, 1965; Sobel, 2008) in our educators and students.

For me, this is one of the most pressing problems of modern education. Unfortunately, like the ground on which we stand, place and ecology often go unnoticed as part of the null, or untaught, curriculum (Eisner, 2002a). By not teaching about the interdependence of the people, places, and environments of world, our students learn that ecology does not matter, and the earth is ours to do with as we like (Orr, 1992). If instead we actively choose to teach with a focus on the ecologies and places in which we live, we can begin cultivating and nurturing an ethic of wonder, compassion, and curiosity for the world. This sense of ecological awe, combined with intellectual and practical insights (Dewey, 1934), can nourish the parched earth, providing a fertile patch of ground for imagining and growing possibilities for a more sustainable and just world.

This study examines the experiences of educators bringing an ecological, place-based school to life in an unexpected environment in a precarious time in the history of the world. The following sections will provide the necessary definitions and explications to situate this study in the landscape of ecological and environmental education. Additionally, a synopsis of the study aims and questions, along with an overview of the methodology of educational connoisseurship and criticism provide a setting off point for the journey that follows.

The Name Game: Interspecies Competition in Environmental and Ecological Education

The type of education Orr alludes to has emerged in many forms throughout the history of education, from nature study to environmental education to outdoor education and education for sustainable development (Smith, 2016). Each derivation of ecological and environmental education attempts to describe education with the earth in mind, if from different perspectives and with subtle variation (Bartholomaeus, 2013; Moroye, 2009). Notably John Dewey's pragmatic approach to education situates the curriculum and pedagogy in place, with children learning specifically from within the places in which they live (1897, 2001). Interestingly, those who emulate his work often focus more on the student-centered *approach* to teaching and learning rather than the *ecology* in which it takes place.

Across the many versions of environmental and ecological education, different details are accentuated and points of view exposed. Sometimes the politics and people of a place are the emphasis of learning, as students investigate how to use civic action to create change or work to capture the histories of the people who live in a place (Chawla, 1999; Chawla & Flanders Cushing, 2007; Lowenstein, Martusewicz, & Voelker, 2010). Other times the focus falls squarely on learning about the nature of a place, often with a particularly scientific bent such as investigating and making sense of the interdependence of the rocks beneath the soil beneath the trees beneath the birds beneath the sky (Coker in Shannon & Galle, 2017; Watt & Bautista, 2016). Sometimes, as in outdoor and adventure education, the focus is on our experience in nature, exploring, playing, and pushing our comfort levels (Ingman, 2017). Critique of anthropocentric problem-solving and systems efficiency are often the focus of curricula emphasizing education for sustainable development and eco-justice (Gruenewald, 2008; Martusewicz, Edmundson, & Lupinacci, 2011; Orr, 2004). Both indigenous and ecological education, which for some are one and the same, bring the focus to the interdependent systems and mutually reciprocal and respectful relationships between humans, other living things, and the places in which we live (Cajete, 1994; Kimmerer, 2002, 2013; Paget-Clark, 2016; Smith & Williams, 1999). While disagreements have arisen time and again as to which definition of ecological or environmental education is the most productive in moving towards the goal of a sustainable world (Sterling, 2001), each derivation highlights different and perhaps necessary components of the holistic education Orr envisions. In fact, studies are finding that the key aims of most environmental-focused education and perceptions of most ecological and environmental educators are similar even if the names are different (Fraser, Gupta, & Krasny, 2015).

Throughout this study, I focused on ecological place-based education (ecoPBE) which is best described as a simple set of words that encompasses complex ideas about teaching and learning grounded within the local environment. I define ecological place-based education as inextricable overlap of the places where society, politics, culture, and the environment – in all meanings of the word – meet in intricate and interdependent ways. Based on the work of ecological and place-based educators before me, ecoPBE encompasses the development of the skills, knowledge, understanding, and characteristics that we need to “live well in the places we are” (Orr, 1992, p. 130). EcoPBE emphasizes understanding ecological concepts, developing bioregional knowledge, recognizing interdependent relationships, taking action to solve local issues, and nurturing loving, creative, and just communities (Sobel, 2005). While grounded in deeply heady knowledge of natural systems, political histories, and social theory, ecoPBE is also rooted in the heart-based elements of creativity, connection, imagination, hope, wonder, and love (Leopold, 1949; Burroughs as cited in McKibben, ed, 2008).

The inherent complexity of this type of education has led to numerous attempts at defining and outlining a framework of ecoPBE. Some scholars purport that place-based education should not be defined, outlined, or templated in anyway as the appropriate elements will emerge from within each unique place (Gruenewald, 2003; Hodgkinson, 2011). Others describe place-based education as a form of authentic project-based learning (PBL) (Anderson, 2017; Demarest, 2015) or a form of environmental education (EE) (Wurdinger, 2017). David Sobel, educator and place-based scholar, provides the most commonly used definition of place-based education (PBE), writing: “Place-based education is the process of using the local community and environment as a starting point to teach concepts in language arts, mathematics, social studies, science, and other subjects across the curriculum” (2005, p. 7). Like Moroye (2007), I chose the word ecological instead of environmental because environmental is often intertwined with a particular political or activist stance. Additionally, ecological education brings with it an interactive dynamic, acknowledging the interplay of living things, their environment, and the communities they create (Stone & Barlow, 2005). Whether it is necessary to add the word “ecological” as a defining feature is up for debate, yet I include this descriptive addition to reinforce my understanding that place cannot be separated from the interactions between living things and their environment, which is ecology defined. The interdependent relationships and stories that define any given place should therefore be acknowledged openly and directly (Gruenewald, 2003).

Rationale for the Study

My interest in taking on this research in this particular way was deeply connected to both my own long-standing passion for bringing ecological education to mainstream education and an opportunity provided by my recent professional position. In the role of Director of Education for Sustainability at an international primary and secondary school, I worked with a team of administrators, teachers, and specialists to create a school grounded on the pillars of ecological literacy, sustainability, and environmental justice. I was tasked with the design and implementation of an ecological, place-based curriculum across grade levels and disciplines, including the creation and evaluation of interdisciplinary ecoliteracy objectives. I supported our teachers as they designed and implemented ecological, place-based projects. As an educational researcher, I had the best seat in the house to observe the process of creating an ecological school from the ground up, to examine it from “unaccustomed angles” (Greene, 1995, p. 20), and to “put myself in the way of that which I seek to understand” (Eisner, 1994, p. 346).

Field Guide

In the past, I have done similar work training and coaching teachers in ecological, place-based teaching, but the teachers I worked with always “opted in” to the place-based training, self-identifying as environmental educators, scientists, or even straight up hippies with a deep knowledge of or commitment to learning about place, culture, ecology, and the outdoors. Never before have I been asked to guide teachers who can be described explicitly as “traditional” and having little to no background in science, environmental studies, or ecology, or for that matter place-based and project-based learning. Those of us who are ecologically minded educators (Moroye, 2007) may intentionally or unintentionally design and implement curricula with some embedded aspects of ecoPBE. The necessity of teaching with the ecological and local in mind is integral to our practice as educators, no matter what subject we teach (Moroye & Ingman, 2013). Finding ways to make connections, infusing our teaching with ecological experience, and expressing and modeling care for the environment is second nature to us, in both our private lives at home and our public lives in schools (Moroye, 2007; Moroye & Ingman, 2013). Yet for educators who are not particularly ecologically minded, this approach to teaching and learning is often unfamiliar, verging on foreign, although it focuses on what may literally be in our backyards.

Since first reading David Orr's words that "all education is environmental education" (2004, p. 12), I have wondered how we get *all* teachers, not just the ecologically literate and environmentally passionate, to design and implement curricula through an ecological place-based lens, the way Lewis Mumford imagined the bioregional survey to become the "backbone" of the curriculum (Orr, 1992, p. 128). Is it possible? How does it happen? What does it look like? As Director of Education for Sustainability, I was uniquely situated in the field to examine what ecological place-based education looked like when implemented across an entire school, as the foundational pedagogical framework from the point of view of an administrator and also the classroom educators. Additionally, my personal and professional experiences and expertise enhanced my role within the field as an educational critic. By describing this unique experience as vividly as possible, as well as drawing on my ecological connoisseurship in interpreting and evaluating the situation for others to understand, I sought to use the particular to inform the general, improving ecological education for all.

Rare Birds

The progressive pedagogical underpinnings of ecoPBE, such as student-centered teaching, project-based learning, real-world experiences, and 21st century skills development are finding their way into the everyday lexicon and practice of more educators around the world at varying levels of implementation (Demarest, 2015; National Education Association [NEA], 2017; National Research Council, 2015). At the same time, ecoPBE and similar forms of education, such as sustainability education and environmental education, most often “sit outside the boundaries of – or even contrary to – the state-sanctioned script” (Greenwood, 2010, p. 144). Local place is rarely the starting point or the finish line and ecoPBE is still unknown to many educators (Anderson, 2017; Demarest, 2015; Krauss, 2013). Even the best standards are written for any teacher to use anywhere, and many exemplary projects are taught through a far-flung, global lens. Students make plans to save the rainforest when the desert they live in is scorched by wildfires, and they act out the history of England when they live in Malaysia (Demarest, 2015; Sobel, 1998; Sobel, 2008). Recent studies and anecdotal reports are finding that we spend less time in nature today than ever before and that our use of technologies verge on distracting at best and addictive at worst (Alter, 2017; Louv, 2005; Sampson, 2015; Williams, 2017). In other words, we are disconnected from the people, places, and histories of the land around us, critical components of place-based education.

Our newest teachers, like the students they teach, have been raised with technology and a global world view but often without nature or connection to place.

Additionally, teacher education programs around the world reflect a lack of courses, experience, or other forms of training in ecological or environmental topics or approaches to teaching and learning (Esa, 2010; Green, Medina-Jerez, & Bryant, 2016; Greenwood, 2010; Moseley, Huss, & Utley, 2010). Most teachers do not experience self-efficacy when it comes to teaching about, in, for, or with the environment (Moroye, 2007; Tilbury, 1994, 1997). Creating and implementing ecological place-based education into the curriculum as at Desert School asked teachers to engage with the land and plan for time outside in the local community regardless of their own connection to place or understanding of ecology. This mandate for ecological education could easily be lauded as a step in the right direction and left unexamined. I was left with many questions. What do they think it will be like? What are they most looking forward to? What are they scared about? Will it even work? What is exciting about it? What is most difficult? What is it like for them to plan and teach in this way, in many ways not just moving away – but being pushed away – from the commonly accepted center towards the margins of educational practice (Greenwood, 2010)?

It is also important to recognize that "doing" ecological place-based education is not an easy task even for experienced ecological educators. Often those who do teach through ecological and place-based frameworks are considered rare-birds, overachievers, or troublemakers, and the literature supports this conclusion. Some educators are recognized by students and peers as the Crazy Recycler or the Compost Lady, for example, for better or for worse (Moroye, 2007). At other times, educators who employ ecoPBE are exalted for doing what they do *in spite of* all the standards they have to cover and admit to it "being a lot of extra work" (Demarest, 2015; Wiggins & McTighe, 2005;

Wurdinger, 2017). Jardine (1990) describes the complexity and discomfort created through this sort of education for some teachers, writing, “The notion of an integrated curriculum became a painful one for some as they began to confront…assumptions [of their own schooling]…and began practice teaching in situations of profound disintegration” (p. 109). Additionally, Moroye (2007) noted that she avoided using the word environmentalist in her study of ecologically minded teachers because of the potentially negative or incendiary connotations of the word, and Orr admits that this sort of education is inherently political and difficult (1992). This study looked closely at Desert School’s first year, examining how teachers and I experienced place-based education in action, from expectations to implementation. I was interested in our reactions to and experiences with this approach to teaching and learning. I hoped to expand the literature beyond the current focus on simply defining ecoPBE and providing guidance for “how to” in an attempt to begin examining teachers’ experiences with this approach to education. I wondered: What is revealed and concealed by their intentions? How do their expectations hold up next to their lived experiences of teaching through this lens? What can we learn about ecological place-based education from this new point of view?

Fledglings

Equally important, and often underemphasized, is the fact that many of the teachers profiled as ecological place-based educators have a rich experience in the outdoors near their home, exploring and connecting with the local people, land, and stories, growing food, and literally becoming rooted in place (Chawla, 1999; Demarest, 2015; Gruenewald & Smith, 2008). By only studying the ecologically minded outliers, scholars omit the perspectives of the norm, those without a background in science, experience tramping up mountains, or a deep connection to place. For example, Demarest asked, “How do teachers use place to design and implement curriculum?” (2008, p. 42). She focused on educators experienced in place-based education methods. I worked with less experienced educators with little training in ecological, environmental, or place-based education. Moroye studied “the intentions of ecologically minded teachers and how are these intentions realized (or not) in that teacher’s practice” within a traditional setting (2007, p. 7, 2009). I explored the expectations, intentions, and practices of *non-*ecologically minded educators within an ecological setting to see what there is to see. In many ways I took the work of others, built upon it and then flipped it on its head. In the movement to realize Orr’s verdict, that “all education is environmental education,” we must ensure that we have the most complete story to learn from, which needs to include that of the traditional educator enacting a non-traditional curriculum based in place and ecology. My intention was to bring these voices into the landscape of ecological education and to use them to improve ecological education for all students and the earth.

Field Sketches

Finally, while collecting these stories and listening to these emerging voices, I sought to unpack the underlying assumption that place-based education is a creative or artistic act *for and by the teacher*. Many scholars and practitioners describe place-based educators as designers and creators (Gruenewald, 2003; Smith, 2002b), and some go so far as to describe the place-based educator as an artist with a “palette of possibilities with which teachers create the many ways students experience local learning” (Demarest, 2015, p. 41). Like Demarest and the others, I hold a worldview that teaching is a creative endeavor buoyed by experience and imagination, balanced by equal parts art and craft. Like Eisner (2002a) and other aesthetically minded educators, I believe that artistic teaching awakens students' imaginations (Dewey, 1934; Greene, 1995). I believe that imagination is more important than ever in today's changing climate. We cannot keep doing what we have been doing and expect a different, more sustainable outcome. Imagination allows us to envision the ecological future we want, which is the first step in being able to create it (Orr, 2004), and it is the imaginative, artistic teachers who create spaces for imaginative and creative expression in their classrooms (Eisner, 2002a).

But me holding these beliefs is decidedly not enough to impact or improve education. It is important to ask: is artistry inherent in this approach or the people who implement it, and if artistry is there, what does it look like? I was interested in examining if and how artistry and creativity emerges in planning and implementation as well as the incorporation of place in this particular situation of traditional educators grappling with the ecological. Eisner states that it is the arts that teach us to make judgements in the absence of rules (2017, Kindle Loc. 1030). Climate change and rapid globalization have created a world in which the natural patterns and cycles we have long known no longer function in the same way, and yet we still must make decisions in the absence of reliable rules. Studying teacher artistry is not only beautiful to consider, but also may just be necessary to save the world.

Significance of the Study

Elliot Eisner contends that we only make problems out of the things that we hold in esteem. He writes, "We teach what we teach largely out of habit, and in the process neglect areas of study that could prove to be exceedingly useful to students" (2002a, p.

103). In education, this usually means math and English capture most of the imagination. Energy, time, and money go into to addressing the problems of math and English, as they are two subjects that are tested often and with which everyone is familiar and concerned. It stands to reason that, if we want educational resources – including teacher professional development, training, planning and implementation – to go towards another topic we must make it a problem. David Orr identified the failure to include ecological perspectives in education and in doing so began to problematize ecological literacy. He states, "The failure to develop ecological literacy is a sin of omission and of commission…students are taught that ecology is unimportant for history, politics, economics, society, and so forth…they learn that the earth is theirs for the taking" (1992, p. 85).

This study is important for several reason. First, it seeks to explore rather uncharted territory: that of "traditional" or at least not necessarily ecologically minded teachers undertaking ecological place-based education. Much of the prior research around place-based education focuses on either the outcomes for the students (Lieberman & Hoody, 1998) or on the intentions and practices of ecologically minded educators and conservationist (Demarest, 2015; Gruenewald & Smith, 2008; Moroye, 2007; Smith, 2016; Sobel, 2005; Sobel, 2008). This study shifts the focus squarely to the educator who may or may not center their teaching around place and the environment, which may reveal implications for education that reach beyond the scope of only the ecologically minded educators and toward the rest of the education population. Second, this study is significant in its intention to examine an underlying assumption of ecological place-based education. Much of the literature around ecological and place-based education assumes that creativity and artistry on the part of the teacher in some form as they develop their curricula and support student learning. I am curious how teachers display creativity in their practice *even if they don't see themselves as such or name it explicitly.* If the scholars supporting and practicing ecological PBE assume artistry, does it actually show up, and in what ways? Third, this study is important in its timeliness. Weekly and even daily, we are confronted by natural disasters and ecological shifts so extreme and swift that, for many, it is becoming impossible to deny the enormous and irreversible impact that humans have had on our planet. The idea that "there is no Planet B" is echoed by leaders around the world, and many individuals and communities are choosing to take part in efforts to address our unsustainable ways of living (British Broadcasting Corporation [BBC], 2018; Dunaway, 2015). Examining the experience of educators in this process of shifting practices and paradigms is critical to understanding the path towards imagining and creating the most just, beautiful, and peaceful world possible, for now and always. Finally, I experimented with the literary mode of magical realism interwoven into a more "traditionalist" descriptive approach in presenting the findings through narrative construction (Barone, 2007). This allowed me to explore the significance of using magical realism, an imaginative and fictionalized narrative construction, in educational criticism and connoisseurship dealing with ecological education.

Purpose

The aim of this study was to explore and better understand the process of starting a new school grounded in ecological place-based education through the experiences of the participants. Of particular interest were the participants' intentions and expectations in each of their roles, as well as how these intentions and expectations were or were not realized within their teaching practice.

Research Questions and Their Significance

This study was guided by five research questions:

Q1 What are the intentions and expectations of educators, including the researcher as participant, about their roles in a new ecological, place-based school?

Q2 How are these intentions and expectations realized, or not, within the school ecology?

Q3 What aesthetic judgements and creative attitudes do teachers and the researcher express as they adapt to a new school and ecological, place-based curriculum?

Q4 What is the import of using magical realism within educational criticism and connoisseurship?

Q5 What are the implications of the findings for ecological, place-based schooling in particular and education in general?

In the following section I will describe why these particular questions guide the research at the outset as well as clarify important terms.

Q1 What are the intentions and expectations of educators, including the researcher as participant, about their roles in a new ecological, place-based school?

With this question, I was particularly interested in what McConnell describes as "making space to explore the unknown unknown" within ecological education (Personal Communication, August 2017). Most of the time, ecological education is carried out by ecologically minded educators or teachers with significant backgrounds and/or interests in science, ecology, or environmental issues. They are often working within, and sometimes against the grain of, a traditional curriculum, trying to implement a complementary curriculum, whether intentionally or not. In contrast, at Desert School all teachers were required to teach through an ecological, place-based lens regardless of their background, interests, and training. Most Desert School teachers were hired with little to no specialized education in ecology, environmental studies, or environmental education. The current research and exemplars of place-based education tend to focus on the work of experienced and self-identified place-based, ecological, and environmental educators in action (Demarest, 2015; Gruenewald & Smith, 2008; Sobel, 2005). I asked this question to expand the examinations of ecological education beyond those who choose to teach in this way to those who are required to do so, even though this is rarely the case. This question allowed me to explore where the educators were at and where they hoped to go: What were their intentions? What did they want to happen, hope would happen with regards to curriculum? What were their intentions and expectations for their self in this new role? What were their expectations – for themselves, for me, for their students? This question also provided a place in which to explore their apprehensions or "need to know" expectations, such as self-identified areas for growth, or particular things they were excited about with regards to ecological place-based education. This question helped add a new dimension to the body of literature around teacher attitudes towards environmental education (Esa, 2010), teacher environmental behaviors (Pe'er, Goldman, & Yavetz, 2007), and teachers' environmental literacy and self-efficacy (Liu, Yeh, Liang, Fang, & Tsai, 2015; Puk & Stibbards, 2012; Timur, Timur, & Yilmaz, 2013), which often focuses on teacher limitations, weaknesses, and shortcomings. This question approached teacher beliefs, expectations, and intentions from a place of curiosity and possibility for what they will create. I collected data related to this question mainly through semi-structured interviews, although observations and artifact collection sometimes revealed unspoken intentions as well. As this educational criticism was also an experimentation with auto-criticism (described more fully below) I collected data on my own intentions and expectations through self-reflective journaling on the same questions used for the semi-structured interviews. Additionally, I ended up interviewing two sustainability specialists as a means of helping me to reflect more fully on my experiences.

> Q2 How are these intentions and expectations realized, or not, within the school ecology?

With this question I hoped to gain a deeper understanding into how teachers who are new to ecological, place-based education put their intentions and expectations into practice, even if it means observing that they *don't* put them into practice. Once intentions and expectations are explicitly identified by the teacher, whatever they may be, I began to look for places where these intentions and expectations actually played out, and how, or where there seemed to be an omission, even if it was earlier identified as an aim. This question also allowed for the unknown to emerge, similarly to question number one. While I have expertise in ecological, place-based education and know what *I* might do, I was interested to see how other educators put it into action.

I examined this question through follow up interviews (both informal and more structured) and especially through observations and artifact collection and analysis. I collected different types of artifacts, from lesson plans to pictures of student handouts to student work to lists and sketches of the things they keep in the room or bring to use in a lesson. I similarly reflected on my own planning and practices through journaling and artifact collection, such as keeping notes of my planning for professional development, collecting drafts of our ever-evolving ecological literacy standards, and saving small notes and images that help tell this story. Additionally, my personal journals and autoethnography reflection methods (Chang, 2016) proved useful in illuminating otherwise forgotten moments where "life" and "work" inextricably overlapped.

Guided by Eisner's ecology (1992) I observed not only the teachers' intentions from a pedagogical perspective within the classroom, but also how their intentions and expectations come into play (or not) within their lesson planning and use of the school space and timetable. My intention in applying Eisner's ecology to this question was to keep my focus wide, to remind me to not just look at the pedagogical aspects but to also remain curious about how teachers realize their intentions in other parts of the school ecology.

Q3 What aesthetic judgements and creative attitudes do teachers and the researcher express as they adapt to a new school and ecological, place-based curriculum?

This question attempted to do as Ingman stated: "look for something in particular…and study it" (Personal Communication, August 2017). Unlike the other questions, this one was more pre-figured, rather than emergent (Uhrmacher, Moroye, & Flinders, 2017), because I want to actively look for the ways that teachers apply artistry and creativity (or not) to their work as developing ecological, place-based educators.

While there is not an agreed upon definition of creativity, I was drawn to Kaufman and Gregoire's (2015) explanation of creative people from their cross-disciplinary studies in the field of creativity. They write: "The common strands that seemed to transcend all creative fields was an openness to one's inner life, a preference for complexity and ambiguity, an unusually high tolerance for disorder and disarray, the ability to extract order from chaos, independence, unconventionality, and a willingness to take risks" (p. xxiii). Within this study, creativity can be loosely thought of as the way an individual uses their skills, knowledge, and personality to do something differently or produce something novel and useful in a particular field (Csikszentmihalyi, 2013; Kaufman & Gregoire, 2015) or at the least to discover something new *for themselves* through action (Eisner, 2002a). This is complementary to the idea of art being the process of "discovering ends through action" (Eisner, 2002a, p. 155), which is part of my definition of artistry. The other part deals with what Eisner refers to as the "[precise] tension between automaticity and inventiveness" (2002a, p. 155), which may otherwise be noted as the artistry of teaching. In this study, artistry may be thought of the way in which an individual uses their skills, knowledge, and personality to carry out a task or respond to a situation with grace, intellect, intuition, imagination, and flexibility (Eisner, 2002a, 2002b; Rubin, 1983).

As briefly described above, artistry and creativity are defined in various ways by many scholars over time. This question in particular helped me unpack the underlying assumption found throughout the literature of ecological place-based education that ecoPBE is a creative and artistic process carried out by the teacher. Several ecological education scholars state this explicitly without actually backing up their ideas with connections to observations or scholarly work (Demarest, 2015; Gruenewald, 2003; Sobel, 2005). Interestingly none of the present literature that I have read truly provided direction on how to aid teachers in drawing out their own creativity through ecological or environmental education. At present it is only assumed that if you are doing ecological, place-based education, you are artistic and creative, and that these characteristics come to life in your curriculum and pedagogy (Demarest, 2015; Smith, 2002b).

In particular, this question allowed me to look at what actually shows up in practice. The data for this question was collected through classroom and site observations, lesson planning and implementation observations, teacher reflections or other forms of representation of their experience (this includes my own as a teacher's teacher). I used an ongoing journal for reflection and artifact collection for myself.

Q4 What is the import of using magical realism within educational criticism and connoisseurship?

This question was added during the data analysis and writing phase of my dissertation journey. Due to unique circumstances that arose during the data collection phase of my dissertation – namely the unexpected termination of my position at the school where I was conducting my research – I realized I had to find another way to push on through the data analysis and presentation despite my own discontent and heartbreak due to the changed circumstances. As I began to write, at times my literary style reflected many of the characteristics of magical realism, as defined by Faris, including: irreducible elements of magic; disruption of time, space, and identity; strong presence of the phenomenal world; moments that make the reader uncomfortable or doubtful as they grapple with contradictory understandings of an event; the merging of different realms (Faris, 2004). The purpose of this question was to create a space in which I could explore the methodology of educational criticism, the emerging field of auto-criticism, and the specific methods I used to make meaning from and share my personal experience.

Q5 What are the implications of the findings for ecological, place-based schooling in particular and education in general?

The fifth question created a space to say why what was noticed throughout this study was important (Eisner, 2002a). This question was directly related to methodology, as evaluation is at the heart of educational criticism and connoisseurship (Uhrmacher et al., 2017), and this moved the study into the realm of action and improvement of education (Eisner, 2002a, 2017), with a particular eye towards creating a more sustainable world. Through this question, I made a place to make recommendations for ecological education in particular, but the question was open-ended enough to let that emerge without a particular end in mind.

Table 1

Summary of Data Collection Sources and Techniques

Conceptual Framework	**Research Questions**	**Data Sources**	**Data Analysis Techniques**
Eisner's Ecology of Schooling (1992)	RQ1: What are the intentions and expectations of educators, including the researcher as participant, about their roles in a new ecological, place-based school?	• One on one semi-structured interviews • Participatory research data collection includes journaling based on interview questions and analysis of notes from my work	• Exploratory coding, before first cycle coding. • In-vivo for unique nuances • Emotion coding to examine underlying expectations and intentions
Eisner's Ecology of Schooling (1992)	RQ2: How are these intentions and expectations realized, or not, with in the school ecology?	• Follow up interview sessions • Observations • Artifact collection and analysis (ex. Lessons, student handouts, classroom decorations).	• Classic first and second round coding • Specific annotations, esp. for Eisner's ecology aspects
Artistry in Teaching (Eisner, 2002a; Rubin, 1983) Creativity (Csikszentmihalyi, 2013; Kaufman & Gregoire, 2015)	RQ3: What aesthetic judgements and creative attitudes do teachers and the researcher express as they adapt to a new school and ecological, place-based curriculum?	• Classroom/site observations • Lesson planning and implementation observations • Teacher reflections or other forms of representation	• Analytic memos • Focused/thematic coding based on Eisner's four senses of the artistry and Csikszentmihalyi's qualities of creative people
Magical Realism as a literary mode (Faris, 2004) Educational criticism and auto-criticism as methodology (Uhrmacher et al., 2017)	RQ4: What is the import of using magical realism within educational criticism and connoisseurship?	• Analytic memos • Reflective memos • Personal journals	• Reflective and iterative writing throughout the dissertation process
Educational criticism and auto-criticism as methodology (Uhrmacher et al., 2017)	RQ5: What are the implications of the findings for ecological place-based schooling in particular and education in general?	• Analysis of data throughout study	• Thematic coding

Overview of Methodology

Educational Connoisseurship and Criticism

Educational connoisseurship and criticism (herein educational criticism or ed-crit) is a method of qualitative inquiry aiming to improve education. It was described by Elliot Eisner (2002a, 2017) as a means to create a research methodology uniquely developed to guide *educational* research as distinctive from general social science inspired methodologies. Educational criticism is grounded in arts-based approaches to research and often inspires alternative forms of description and representation (Barone & Eisner, 2012; Eisner, 1994) to enhance our interactions with scholarly research for educational improvement. Connoisseurship is the private act of appreciation (Eisner, 1992, 2002a, 2017) guided by the connoisseur's particular knowledge, expertise, and passion. The connoisseur is responsible for noticing particulars that might otherwise be overlooked. In partnership with connoisseurship, the educational critic must also evaluate what they appreciate about a situation in light of relevant theories, ideas, and models, sharing their judgements with others (Eisner, 2002a, 2017). This is done through criticism, or the public disclosure of private observations. This is often done through a specific lens and with the aim to "make the familiar strange" (Uhrmacher et al., 2017, Kindle Loc. 211). The intention of educational criticism is to both educate the audience and evaluate the implications of the findings as a call to action for the improvement of education.

As an educational connoisseur I was guided by Eisner's (1992) ecology of schooling which provided me with a framework to support observation, interpretation, and evaluation of schooling through my particular lens throughout this study (Uhrmacher et al., 2017). Eisner (1992) identified five dimensions of schooling that interact, and which should be considered as an ecological system to enact educational reform. These five dimensions are curricular, pedagogical, structural, intentional, and evaluative. The curricular dimension reflects what is taught; the pedagogical looks at how it is taught; the intentional considers the aims and goals; the structural refers to aspects time, space, and organization; and the evaluative looks at "what counts" in education, although "what counts" differs from person to person and institution to institution (Eisner, 2017, p. 81). Eisner's ecology provided me, as a researcher and connoisseur, with a clear framework around which to build my observations, interviews, and other means of data collection and analysis. Additionally, maintaining a parallel wholistic ecological lens within my research methods complemented the interconnected ecological approach to teaching and learning enacted by the teachers.

If educational connoisseurship can be guided by a consideration of the five dimensions of the school ecology, the actual educational criticism is organized by the four dimensions of description, interpretation, evaluation, and thematics. Briefly, description of the situation observed by the connoisseur is presented in such a way as to allow the reader to experience as if they were there, observing alongside the researching. Interpretation is the process by which the educational critic make sense of what they have experienced through scholarly theory and personal understanding. Through evaluation the educational critic states what is of import from the research. It should be noted that evaluation is not limited to that which is deemed "good" or "successful." Through evaluation the educational critic draws out what is of value in order to improve education for a particular aim, in this case ecological education.

I chose this methodology because of its focus on improving education as well as the opportunity for taking an arts-based approach to research. Eisner writes of educational criticism and connoisseurship as having the "ultimate aim" to "contribute to the improvement of education (2017, p. 2). My intention in this research was to improve the implementation of ecological education through a deeper understanding of the experiences of educators trying to enact ecological education for the first time, in new and surprising settings.

Auto-Criticism as an Emerging Field

Recently, auto-criticism has been emerging as an exciting and meaningful subgenre of the long-standing methodology of educational criticism. While educational criticism was first described by Elliot Eisner in 1976 as a form of educational inquiry and evaluation, Uhrmacher et al. (2017) recently offered recommendations for possible elaborations and extensions of the methodology. To my knowledge, only one doctoral dissertation has been conducted through auto-criticism (Rezac, 2019), and I was able to find one master's thesis integrating the methodology into their study (Fornshell, 2018). Currently, I am aware of several individuals who are actively experimenting with auto-criticism or who have conducted auto-criticisms, but which are yet to be published.

Rezac (2019) provided several interconnected explanations of auto-criticism through her groundbreaking doctoral dissertation. The one most useful to me explained auto-criticism in this way: "An auto-criticism allows for the examination of an experience through a critical lens that accounts for the individual experience as well as the setting that experience is encountered through" (Rezac, 2019, p. 24). Additionally, she writes, "Auto-criticism seeks to ask: what is our role in what we contribute and how do we shape our own story?” (p. 33). This is building off the original idea offered by Uhrmacher et al. of auto-criticism as a methodology encouraging the researcher to “write about one’s own life in the context of being a teacher, a principal, a social worker, a nurse, or a business leader, and in doing do, one would want to interpret one’s own narrative with categories that bring new intellectual ideas to life” (2017. P. 79). Rezac emphasizes the importance of maintaining focus and reflection on *the experience* of the researcher *in a particular setting*, versus examining the influence of the particular cultural background of the individual, as is often the case in other auto-qualitative methodologies, such as autoethnography (2019). In this case, I wrote about my own life in the context of being a senior leader at a new ecological school. In fact, what was initially intended to be presented as a balanced combination of educational criticism and autocriticism was finally and notably a bit more heavily representative of autocriticism, with educational criticism intertwined. By focusing on my own experience as a researcher-participant alongside the work of the teachers in the same school, I hope I provided a view of the same situation (starting a new ecological school) but from a different angle in order to build on the collective understanding of ecological place-based education in particular and education in general.

Auto-criticism employs the analytic frameworks of description, thematics, interpretation, and evaluation that ground educational criticism (Uhrmacher et al., 2017). At the same time, it seems that there is potential within auto-criticism for drawing out the arts-based aspect of this arts-based approach. Rezac, in evaluating auto criticism as a methodology, described the importance, for her, of using painting and journaling to explore her particular experience. She explained that these two methods of representation were the format that “best served” the auto criticism and provided space for “deep access to self-inquiry, reflection, and critical valuing” (Rezac, 2019, p. 21). In other words, she seemed to be encouraging other auto-criticism researchers to find both the methods of inquiry and form of representation most useful for fully and honestly representing a particular experience. As will be explored more fully throughout this study, I found that using magical realism to tell parts of my story allowed me to more completely step-back from the situation, while at the same time immersing myself in the emotionality and complexity of the experience; to more honestly, perhaps objectively, analyze my experience, and to better guide the reader through the story (Rezac, 2019; Eisner as cited in Rezac, 2019).

Choosing Participants

I designed this study around Desert School which I helped to open as a founding member of the Senior Leadership Team (SLT). I was specifically interested in unpacking the experiences of educators during the founding year of this particular ecological school with a place-based focus. In an email to all educators, including specialists, leadership, and part-time staff, I explained a little about the study and solicited volunteers to those interested. I used purposeful selection through volunteer sampling (Jupp, 2006) among the teachers, as I was interested in working with those people who really wanted to be a part of the project of their own volition. Three teacher participants decided to participate. Additionally, I participated as a participant-researcher, and eventually I also recruited two sustainability educators outside of the school to participate as “others of similarity” in order to help me reflect more fully on my experience (Chang, 2016).

Desert school educators. Ms. Liz is from England, and she is an Early Year's teacher in her third year of teaching. At the time of the study she was in her first year living in the city. Mr. Kit is a Primary Years teacher from England. At the time of the study he was in his first year living in the city and his fifth year of teaching. Ms. Tanya is also a Primary Years teacher, as a well as member of the middle leadership as a Phase Leader. Ms. Tanya is also originally from England, although she had visited city many times before finally relocating to the region. She has worked in this city for about five years total, and she was in her seventh year of teaching during the study. During the time of data collection, I was the Director of Education for Sustainability, which was a role within the Senior Leadership Team. While I was still new to the city, I had arrived about six months before new teachers. At the time of the study, I was in my eighth year of teaching in schools, and my twelfth year in ecological and sustainability education.

Others of similarity. During the data analysis phase, it became increasingly clear to me that in order to truly examine my experience in this setting from all angles, I needed to bring in "others of similarity" (Chang, 2016, p. 100). Through my connections within the sustainability network of the city, I was able to find two additional participants to take part in the research as a means of applying a "compare and contrast technique" to provide validity and reflexivity to my data (Chang, 2016, p. 100) as well as referential adequacy (Uhrmacher, et al., 2017). These two participants, through interviews, conversations, observations, and artifact sharing, were critical to helping me capture a more holistic story. Ms. Mara is a sustainability education specialist who has experience as a classroom teacher as well as three years experiences as the founding sustainability coordinator for an international school in the city. She has lived in the MENA region for five years and is originally from North America. Ms. Billy is also a sustainability education specialist, as well as the sustainability and garden coordinator at an international school in the city. She has been in her position at the same school for seven years. She has lived in the MENA region for over a decade. Ms. Billy is originally from North America.

Auto-Criticism and researcher statement. I want to be clear about my role as a both the researcher and a participant in this education research endeavor. As noted above, I had the best seat in the house to observe teachers. At the same time, I was a pivotal player in bringing the mission of Desert School to life through ecological, place-based education. I believe that examining my own intentions, expectations, and practices, as well as my own artistry within ecological education adds an additional dimension to the research for others wanting to create this sort of education in other communities around the world. Uhrmacher et al. (2017) wrote of auto-criticism as a means to "write about one's own life in the context of being [in a certain role] …and in doing so…interpret ones' own narrative with categories that bring new intellectual ideas to life" (Kindle Loc. 1860) within the methodology of education criticism and connoisseurship. David Sobel calls for an "environmental educator in every school" (2005, p. 53) to be *the* person who supports this "education of a certain kind" (Orr, 2004, p. 8) through teacher development, direct instruction, resource development, and community outreach, to name a few aspects of this "environmental educator" role. I was this person at Desert School, and I saw this as an opportunity to deeply consider my experience and its import for the improvement ecological education. For other leaders and administrators looking to carry out ecological, place-based education, they may find my juxtaposition of teacher experience and teacher-leader experience as helpful in guiding their work with more specificity within their role in supporting teachers. For teachers wanting to improve their practice of ecological education, they may find something of value in considering both the description and evaluation of the practice of their peers, the teacher participants, as well as the person in charge, so to speak. I also believe that being a part of the research process myself helped me bridge the gap of hierarchy between teachers and myself and allowed us to develop much needed empathy for one another.

Data Collection and Analysis

My study sought to understand the intentions and expectations of educators in a new ecological school, as well as to examine the artistry present – or absent – in their practices. Educational criticism, like many modes of qualitative inquiry, uses rich description, nuanced details, and dialogue to "convey to the reader what experience itself would convey" (Glesne, 2016; Stake, 1995, p. 39) in order to paint a coherent and whole picture. In order to do so, I relied on three main forms of data collection: interviews, observations, and artifact collection. I hoped to also collect creative or artistic self-reflective artifacts from all of the Desert School teachers, but only one teacher responded to my request, while the other two told me that they "just didn't have enough time in their day" or "didn't know how they would fit it in with everything else for school." For the auto-criticism, I responded in writing to the same initial interview schedule as the teacher participants. I also kept a diary which included detailed notes related to my daily activities, specific teacher observations, and general experiences at Desert School. I collected all sorts of artifacts ranging from teacher created artwork to pictures of my whiteboard to images of the landscape around the school, which were incorporated into my data analysis and eventual representation.

I spent approximately six weeks directly observing each of the teacher participants, along with collecting many vignettes on an ongoing basis throughout the spring and summer terms. The amount of time spent with each participant varied depending on the coordination of our respective schedules. Some visits were as short as twenty minutes, with other observation opportunities stretching for an entire day. I was also able to observe teacher participants in different setting and during non-class hours, such as playground or lunch duty, planning and staff meetings, professional development days, special events on campus, and on field trips and residential excursions. Because of the "across the school" nature of my role, I was also invited into many impromptu moments for observation and data collection because I happened to be passing by, and the participant wanted to share something with me on a whim. I felt very lucky to have three participants who were eager to share their work with me and enthusiastic and honest when talking about their experiences with ecological place-based education. The auto-criticism observation and reflection period stretched from before I arrived at Desert School to the time after leaving Desert City and drew on techniques used in auto-ethnography to draw out memories and deepen understanding of experiences past and present (Chang, 2016; Ellis, 2004).

Greater description of the intricacies of my data collection will be shared in Chapter Three. Briefly, I conducted an initial semi-structured interview with participants prior to starting formal observations. I transcribed each interview by hand, adding in reflective memos and highlighting emerging themes from the very first interview. I also noted any follow-up questions on the initial transcript. After several sessions of observations as well as preliminary analysis of the interview transcripts, I crafted a set of follow up questions for each participant based on the transcription and notes. These follow up questions were shared and answered in various ways, depending on the preference of the participant. Mr. Kit often preferred to be sent questions via email so he could take time to consider his answers. Ms. Tanya and Ms. Liz tended to prefer to just talk through questions as they arose or in passing. During observations, I collected pictures of the teacher in action, teacher created handouts or presentations, and images of student work and settings to help me remember the moment with greater detail. I was able to conduct a final interview with both Ms. Liz and Ms. Tanya. Mr. Kit offered to take part, but we were never able to coordinate at time that worked into his schedule. The final interview schedule created for each participant, including Mr. Kit, are presented in Appendix B.

For data collection on my own experience, I kept research journals, both handwritten and electronic, in which I collected vignettes of my day, funny or inspiring quotes, answers to the interview questions, reflective memos, more lists than I could count, and various artifacts, such as newspaper clippings and school event memorabilia. I also relied on personal journals as a data source reflecting my entire journey from start to present day, as will be further described in Chapters Three and Four. I also collected many digital images of the development of the school grounds, teacher planning documents, and examples of student work illuminating specific intentions or aims. I created several artistic pieces as a means of exploring my experiences throughout the year. All documents and artifacts span the entirety of my time surrounding this experience, from the initial interview to the days leading up to and following my leaving the city.

The comparative interviews with “others of similarity” were collected both via Skype and in person. For Ms. Mara, we had one and a half hour Skype conversation, as well as several follow up conversations via email or text message due to the distance and time zone difference. Ms. Mara also invited me to use her personal Instagram page as a means to get a deeper look into her practice as a sustainability educator. Ms. Billy and I spent the day together at her school, during which time I paired observations with a sort of ambulatory interview, in which all the questions of the semi-structured interview were asked and answered over the course of the day and in various locations. Ms. Billy also shared online planning documents with me for review, as well as suggested I look at her school Instagram account for further visual evidence of her work in ecological education.

Changes and Amendments

At the end of the school year I was informed that my position, along with several other positions, was being cut for “restructuring and reprioritization” (this will be discussed in greater detail in Chapters Three and Four). Per the participants’ requests earlier in the study and in partnership with the school, I had planned to continue research into the second school year to accommodate their increasingly disrupted schedules and the learning curve they were on. With the changes in my employment at the site, this plan was no longer an option. In partnership with the participants, we decided that the best way forward would be for final questions or follow-up to be conducted by email, Skype, or in person meetings as possible. Final follow up interviews were conducted towards the end of the first term of the second year of the school over email and in person.

A greater explanation of my data analysis is provided in Chapter Three. Briefly, I began data analysis starting with the initial semi-structured interview. As noted above, in the process of transcription I added reflective memos and follow up questions and highlighted surprising or funny moments. Initially, I especially relied on “in vivo” coding (Saldaña, 2016) to help draw out emerging themes with regards to teacher intentions and expectations using their direct words. I did all of my initial coding by hand on the computer with the comments and review tracking “on”. Once observations began, I used a similar process to examine how the initial intentions and expectations were realized, or not, in the teacher practice, with a focus on Eisner’s ecology (1992) as a guiding analytic framework, asking myself questions like, “Does this intention show up in their teaching? In their planning? In their classroom?” I eventually organized my thoughts into several spreadsheets so that I could easily flip between them and keep things organized, as well as carry with me to work on in those surprising moments of inspiration. As I coded, I also added reflective and analytic memos to the data, specifically the interviews and vignettes, drawing on the tools and methods of autoethnography data collection (Chang, 2016; Ellis, 2004) to inform my auto-criticism (this will be further explained in Chapter 3). As subthemes coalesced and larger and more robust themes surfaced, I wrote out the main ideas on strips of paper and arranged and rearranged them on my office floor in an effort to seek greater clarification and engage in the data in a physical way. These themes and their organization are described and interpreted more fully in Chapters Four and Five, using the methodology of educational connoisseurship and criticism (Eisner, 2002a; Uhrmacher, et al., 2017). Implications and evaluation of the findings are discussed in Chapter Five.

Clearing a Path, Moving Forward

For many years, my summers were spent cutting firebreaks and building trails with only hand tools and human power. This process always began with first clearing a simple, small, and narrow path. The process was often difficult and uncomfortable, and at times it seemed like progress was imperceptible despite hours of hard work. I always had to keep in the back of my mind the idea that the completion of a new trail opened up the possibilities of adventures previously impossible and unimagined. Examining the problem of the paths and possibilities for ecological place-based education is an important one, not only for education but for the future of the planet.

In the remainder of the dissertation, I will guide the reader along the trail I have been following for the last two years as a senior leader at Desert School, as well as throughout my life as a human being on this beautiful planet. I include stories that are entirely personal in nature and incorporate experiences from across my life and various careers. These are presented alongside the retelling of my experiences at Desert School. I pair these descriptions with those of the teachers and their experiences at Desert School, learning to do ecological place-based education for the first time. The remainder of the dissertation roughly follows the rhythm of a garden caretaker, as I came to think of myself through the process of writing this dissertation: knowing the space, preparing the soil, tending the land, celebrating the harvest.

In Chapter Two I present a literature review to help us better know the land and situate the study within the particular context of ecological place-based education, artistry, educational criticism, and magical realism. In Chapter Three I present the methodology and methods employed in this study to further ground us in place. In

Chapter Four, I share the stories of preparing the ground and tending the land, so to speak. In particular, I describe and interpret our experiences getting an ecological place-based school up and running in the first year from the months before the teachers arrived to several days before the end of the first school year. Finally, in Chapter Five, I offer a celebration of the harvest in the form of further interpretation, evaluation, and analysis of the findings. In this chapter I address the specific questions that guided this study in light of the findings, and I present the themes that emerged from within the data in order to offer recommendations for the improvement of ecological place-based education moving forward into the next season.

CHAPTER II

LITERATURE REVIEW

A Teacher and an Artist

Finger-painting was one of my favorite pastimes as a young child. The tubs of goopy paint, the coolness of it on my fingers, the delight of making marks and mixing colors: all of it vivid in my mind to this day. When I was six, I asked for painting lessons from my best friend's mom, who was herself a professional artist and someone I adored for her art and kindness. The classes were held at a church, in the nursery area. Every Saturday, toys were piled into bins and pushed against the walls, and the folding tables used for big dinners and meetings were arranged into a square, with everyone looking in. I was the youngest in the class, and my feet could not quite touch the floor. I took to crouching on my chair or standing with one foot on the ground the other on the seat next to me, as if at any moment I might launch myself into the air. Jude asked us to bring in our own pictures and ideas to practice with, and she taught us everything from the basics of washing out our brushes and stretching canvas to more complicated backwash techniques and brush strokes. I painted pictures of flowers from our backyard and tigers I cut from magazines. Once I painted the land behind my house as it looked before they turned it into an apartment complex.

I was very shy as a child and hated to be addressed directly in front of a crowd. Jude knew this and would often make her way over to me to quietly offer suggestions while others were deep into their work. Sometimes she would take my hand in hers to guide my brush across the page, maybe elongating a shadow or adding a detail she sensed was missing. Once she leaned down after noticing me frozen in action, my canvas blank and paints untouched, and she whispered, “Don’t worry about mistakes. Breathe. Relax. Just paint. This is yours and no one else’s. Who knows what it will become.” My heart leapt at the thought. It was Jude who taught me how to plan out a painting, sketching and drafting, using relative proportions to block off parts of the canvas, and mixing and testing colors before laying them down on the page. She also showed me how to let a painting emerge, how to relax my gaze to see the bigger picture, how to turn errors into the best part of a painting. She helped me understand that artistry was as much about using my gut as much as the techniques she shared with us, a concept I carry with me in my own life and work. Over the years I have taken many classes, some inspiring, others mind-numbingly dull. I go through phases of painting daily to not painting for years, but it doesn’t matter. Every time I set out the brushes, the water, the canvas, I think of Jude and her talent as an artist, as a teacher. With the first strokes of color across the page, I hear her voice, “This is yours…who knows what it will become.”

In the following sections I follow Jude’s lead, breaking down scholarly literature of ecological place-based education in to several art lessons, from basic definitions and aims to an exploration of the form and content of ecological PBE to reflections on the artistry and craft of ecological educators in action, the canvas becoming what it might be.

The Artist's Studio: Defining Ecological Place-Based Education

"You can't know who you are until you know where you are." This quote, attributed to Wendell Berry (Stegner, 1992), is oft noted throughout the literature on place-based education. For ecological place-based educators, where we teach and learn, where we create our art, is firmly connected to the place in which it occurs.

To some, place means simply the landscape: the rolling loess hills, the wild sea and the protected coves, the shifting sands of a desert. To others, place is all of this *and* the people, the culture, the stories that bring that landscape to life. For others still, place is intricately connected to built structures, social systems and political boundaries. The iterations of place-based education reflect this diversity of perspective, and the continuum of PBE stretches from simply getting students outside to getting to know the world beyond the classroom walls on a daily or weekly basis (Gruenewald, 2003; Sampson, 2015) to using the local environment as an integrating context for teaching and learning (Anderson, 2017; Howley, Howley, Camper, & Perko, 2011; Leslie, Tallmadge, & Wessels, 1999; Lieberman & Hoody, 1998; Powers, 2004; Sobel, 2005) to complex, interdisciplinary civic action projects that solve real problems or address local issues (Demarest, 2015; Lowenstein et al., 2010; Watt & Bautista, 2016). Like a painter preparing a canvas looks for variations on cloth and wood, most place-based educators call on David Sobel's (2005, p. 7) definition of place-based education as their basic starting place:

> Place-based education is the process of using the local community and environment as a starting point to teach concepts in language arts, mathematics, social studies, science, and other subjects across the curriculum. Emphasizing hands-on, real-world learning experiences, this approach to education increases

> academic achievement, helps students develop stronger ties to their community, enhances students' appreciation for the natural world, and creates a heightened commitment to serving as active, contributing citizens. Community vitality and environmental quality are improved through active engagement of local citizens, community organizations, and environmental resources in the life of the school.

While many recall only the first sentence of this paragraph, I am including Sobel's definition in its entirety, as I believe it is the thoroughness and complexity of this definition that has supported the diversity of PBE conceptual frameworks across the field as well as the on-going discussions, critiques, and disagreements around parallel, competing, and complementary approaches to education in, for, about, (Sterling, 2001; Tilbury, 1994) and with the environment (Hodgkinson, 2011; Moroye, 2007).

Throughout this study, I was interested in taking the broadest view of place-based education and considering all variations from simple to complex and all variations in between. The teachers I worked with were inexperienced place-based educators who were finding what worked best for them in their first year at a new school. I knew from experience that each educator would be more or less comfortable with the model and incorporate it into their teaching from their unique point of view. For some, this just meant learning how to plan and implement lesson plans in the outdoors. For other educators, they successfully dove headfirst into outdoor education and community problem solving. With this in mind, I have not focused on only one "type" of PBE. To provide a little bit of orientation, I describe a few examples of specific versions of PBE that teachers implement across the world in the following paragraphs.

The most common ideas that arise when you think of place-based education may be ones that are familiar to many teachers, no matter what it is called: exploring the forest behind the school, caring for plants in the school garden, or perhaps interviewing community members about changes they have experienced in their lives in town. While these are more typical of the experiences of the teachers in this study, it is important to note that there are other variations on place-based education. One example is critical PBE (Gruenewald, 2003), which “challenges all educators to reflect on the relationship between the kind of education they pursue and the kind of places we inhabit and leave behind for future generations” (Gruenewald, 2008). Educators in this field are often not only drawing on the local as an inspiration for teaching, but they are questioning current educational paradigms and offering alternatives. Jickling (2017), for example questions the “current models of education” (p. 17) through the lens of sustainability education and its impact, or lack thereof, since its inception in the 1970s. Bowers (2001) critiques the American educational system and its deeply held – and rarely questioned – beliefs around consumerism, standards-driven outcomes, and measures progress as defined by a Capitalistic society with the intention of critiquing the most common approaches to both educational reform and ecological justice. Indeed, scholars and educators of critical PBE are interested in creating spaces for reimagining and reconstructing education as we know it for a more just and sustainable future.

Another form of PBE takes on variations of ecojustice and community-based PBE (Lowenstein, et al., 2010) which focuses explicitly on democratic systems and civic engagement to address real community issues, especially related to environmental degradation and social inequities. In this form of PBE, students, teachers and community members work together to determine an issue of concern in the local place and set about the complex task of making change to address the problem (Martusewicz et al., 2011). Often this is a long process, not a one-off experience, as students work over time to build partnerships with local community members and decision makers to better understand the stakeholders, research the issue, and make recommendations that brings about actual changes to practices or policies (Zemelman, 2016). Like much ecological PBE, but not all, ecojustice problem solving through civic engagement and community-based learning uses a project-based approach to support this complex process (project-based learning is explained further below).

A third variation on PBE, and perhaps the most familiar by name, is service learning. While sometimes service-learning projects are long term and have a similar feel to fully integrated place-based teaching and learning (Demarest, 2015), service learning can also be a simple one-off opportunity, usually oriented towards a specific community-oriented service experience, such as trail building or trash clean up. While the extended experiences tend to more fully develop or apply the skills, knowledge, and appreciation that lead to ecological mindedness and environmental behaviors (Chawla, 1999; Hungerford & Volk, 1990; Moroye & Ingman, 2013), even a single day of ecological experiences through service learning can act as a powerful entry point for teachers looking to “start small” in implementing PBE in their classrooms (Anderson, 2017, Kindle Loc. 2560).

At this point it is important to recognize and define project-based learning. Often place-based learning is considered to be a form of project-based learning, although this is not always the case, as described above with service-learning one-off experiences, for example. Just like Sobel’s definition of PBE (2005), project-learning is steeped in hands-on, inquiry based, real-world problem solving and investigation (Boss & Krauss, 2014). This approach to teaching and learning is driven by big questions (essential or driving questions), student interest, and the interaction of students with the material they are researching and uncovering. The teacher wears many hats as a project-based teacher, similar to a place-based educator, and at times they are the designer, community organizer, planner, manager, critic, or even the student, learning along the way with their class. The students take on similarly diverse roles *within* the project (Boss & Krauss, 2014). Demarest (2015) draws many parallels between PBE and PBL, and she created many useful tools and frameworks to help teachers navigate the process of thinking through place-based projects. One of the key aims of PBL, as defined by leaders and teachers connected with the Buck Institute for Education is to "develop the process skills that will help [students] navigate a rapidly changing world" such as the ability to "contribute to team efforts, think critically, solve problems creatively, and communicate effectively, all while engaging in deep learning of important content" (Larmer, Mergendoller, & Boss, 2015, p. 1). As was observed in this study, it is sometimes difficult to definitively say if PBL and PBE are two distinct approaches or simply two shades of the same color.

While most often in the literature PBE is drawn with big, broad strokes, throughout this study I considered PBE through an ecological lens, hence the use of the term ecological place-based education, or ecoPBE. To define this idea more specifically, I offer an addendum to Sobel's original definition. In addition to all that he described, through these experiences in the local community and environment, *ecological* PBE also guides students in recognizing ecological concepts across the curriculum, expressing their understanding of these concepts in unique ways, demonstrating care for the living and non-living things around them, and expanding students' creativity and imagination beyond what is to what could be. This echoes Moroye and Ingman's (2013) definition of ecological mindedness and maintains the interactive and dynamic nature of place-based education, and, I believe, provides a more diverse palate of colors for painting a more complete picture.

Art Lesson 1: Linen and Pine - How to Build a Canvas

After a few weeks of classes with Jude, we came to class and were surprised to find no paints or brushes anywhere. The easels were still folded up in the closet, and Jude's face revealed a mischievous grin. "Today," she said, "we are going to stretch our own canvas." She pointed to a large role of linen and a bin of staple guns. There were several simple frames already built, one for each person in the class, and piles of pine stretcher bars neatly organized by size. Jude explained that there were many different ways to stretch a canvas, and that we would have to play around to find the method that worked best for us. She then went on to demonstrate how to put together a frame, using the terminology of the craft as she did: the *mitered* ends fit neatly together, the *beveled* edges keep the wooden bars from showing through the canvas, the canvas pliers grip the canvas tightly and provide *leverage* while securing the canvas in place. "When you get good at it," she explained, "you'll be able to stretch a canvas on your own, but today we will work in teams." Being the littlest, I needed a lot of help and honestly did more watching than pulling and stapling. The loud BAM BAM BAM of the staple gun punching through linen and pine was a surprising noise in our usually serene nursery turned artist studio, but it got the job done well and quickly. Years later, in another painting class with another remarkable teacher, I would learn that building stretchers and pulling canvas will give you blisters, and unbeveled edges will rip through a brilliantly pulled cloth. I found out that sometimes you need to build a stretcher so big only two by fours would do and that you can create a single image of many tiny frames. I learned that some artists preferred ducked canvas versus plain and would only, only, only use maple stretchers and that others would just as happily paint on an old shirt stapled to plywood board. We may all be artists of some shape or form, but we certainly do not make art in the same way.

The history of ecological place-based education is similarly diverse, as varied in its becoming as a blank canvas ready for painting. Much of the literature, whether espousing a new idea or providing an illuminating example, tends to start with a bit of a history of place-based education: where it came from, where it is now, and where it is going. Smith (2002a, 2016) provides a clear outline of the role of place in education before compulsory schooling laws. At this time, place was everything, especially within the context of the family and local community, for better or worse. Near the turn of the 19th century, Dewey lamented what he saw as a divorcing of school from the home life at the detriment of the educational experience of the child (1897, Article 2, para. 7). He wrote:

> I believe that much of present education fails because it neglects this fundamental principle of the school as a form of community life. It conceives the school as a place where certain information is to be given, where certain lessons are to be learned, or where certain habits are to be formed. The value of these is conceived as lying largely in the remote future; the child must do these things for the sake of something else he is to do; they are mere preparation. As a result, they do not become a part of the life experience of the child and so are not truly educative.

Place-based education, in the forms of nature study of the local communities and nature, problem- and project-based learning, and student-led experiential education – all integral to ecological education as well – was part of Dewey's answer to creating meaningful educational experiences.

Woodhouse and Knapp (2000, p. 1) quote Dewey as writing, "Experience [outside the school] has its geographical aspect, its artistic and its literary, its scientific and its historical sides. All studies arise from aspects of the one earth and the one life lived upon it" (Dewey as cited in Woodhouse & Knapp, 2000). Place-based education is often viewed as an extension of progressive education and the nature studies curricula of the early 20th century (Smith, 2002a, 2002b). It can be, sometimes confusingly, described in the same breath as several other approaches to teaching and learning, including environmental education, rural education, sustainability education, ecological education, outdoor education, experiential education, and community-based learning, to name a few. Ecological place-based education is both guided by and influences these approaches, as well as some more "mainstream" pedagogies, such as project-based learning, problem-based learning, and service learning (Anderson, 2017; Demarest, 2008, 2015; Wurdinger, 2017).

It is important to note that some scholars dedicate sections of their writings contrasting PBE and similar educational approaches (Gruenewald, 2003; Gruenewald & Smith, 2008; Smith, 2016; Woodhouse & Knapp, 2000; Wurdinger, 2017). There is a clear distinction for them, as there is for many place-based educators who see "environmental education to be a sub-field of what I believe to be the broader field of place-based, or place-conscious, education" (Gruenewald, 2005, p. 262). For example, many scholars describe environmental education as focusing on education *in* or *about* the environment. Ecological education on the other hand, and ecological PBE by relation, is defined as education *in relationship with* the environment, which is made up of the people, ecology, and culture of the local place (Smith & Williams, 1999). Smith and Williams clearly highlight what they see as a distinction between environmental education and ecological education. They write, “What environmental education has tended to forget and ecological education attempts to remember is this ineluctable relationship between specific biosystems and cultures, and that cultures that have demonstrated their sustainability have often developed highly specific practices well suited to the characteristics of their particular region” (1999, p. 4).

While I personally and professionally fall more towards the ecological side of the environmental and ecological continuum, defining the exact boundaries of ecological PBE is not nearly as important to me as expanding the scope of ecological and environmental education (EEE, as abbreviated in Moroye, 2007) to include not just the science and politics of environmental protection but all the other aspects of environmental care: joy, wonder, love, hope. Sterling suggests that arguing over variations of sustainable education, such as ecological place-based education versus ecological education versus environmental education is not necessary, that each contribute uniquely to the aim of educating ecologically literate citizens (Orr, 1992; Sterling, 2001). Other writers, such as Orr seem to have no reason to differentiate between ecological, environmental, and place-based education, and often use the terms interchangeably to describe the “education of a certain kind, that will save us” (Orr, 2004, p. 8). To each artist, educator, and scholar, the stretcher bars framing place-based education may be made of different material and the canvas of varying fabrics. The process of building one canvas may be wholly unique despite looking awfully similar to the one next to it. Knowing the tools and process, the key terms that define your art are the starting point for creating your own authentic style, to being able to sign your name at the bottom of the painting.

Art Lesson Two: Rivers and Sand – Parts of the Whole in Ecological Place-Based Education

The well-known American painter Georgia O'Keeffe is probably best known for her voluptuous and richly colored flowers as well as the landscape paintings of her beloved Southwest. Less well known are some of her simpler drawings and the myriad sketches she often created to capture ideas and images that would later be incorporated into large and complex paintings. One series of images she made was based on her view of the land from above. She wrote, "When I flew around the world I was surprised to see how many large spots of desert we went over – with a large river or river bed crossing over the sand. I made many drawings about an inch high – that later, when I was home, I made into larger drawings, and after that paintings" (O'Keeffe, 1988, n.p.). These drawings and eventual paintings show rivers with many branches meandering gently or veering sharply across the surrounding landscape. When I examine the literature surrounding ecological place-based education, I can't help but think of O'Keeffe and the assimilation of many small, quick sketches into an integral, imaginative whole. Ecological place-based education is, to some, the main river into and from which all the tributaries and distributaries flow. To others, this approach is just one branch of their preferred pedagogy, such as project-based learning or education for sustainable development. For myself, I am less concerned with the hierarchical nature of rivers or pedagogies and more interested in how they interact to nurture healthy and resilient ecosystems. In what follows I will explicate several of the more common branches supporting ecological place-based education.

Environmental education. Environmental education is a broad term with several different interpretations. Most generally it is described as a process of educating people so as to increase their knowledge and awareness of the environment and develop the skills, understanding, and attitudes needed to take action to address these issues (Environmental Protection Agency [EPA], 2018; Hungerford & Volk, 1990; North American Association for Environmental Education [NAAEE], 2017, 2019; UNESCO, 1978). Since the Tbilisi Conferences in 1978, when the first formal definition of environmental education was put forth, there have been slight modifications and additions including an emphasis of the importance of actual experience and practice taking action, not just the understanding of how to do so (Chawla & Flanders Cushing, 2007; Hungerford & Volk, 1990).

Often environmental education is treated as a separate subject or seen as an extension of science education, an interpretation exacerbated by our societal belief in the power of science and data and emphasized in the original Tbilisi Declaration's that "education utilizing the findings of science and technology should play a leading role in creating an awareness and a better understanding of environmental problems (UNESCO, 1990, p. 11). This interpretation very much approaches environmental education as education *about* the environment and is guided by an overarching premise that the more we know about the environment – from basic science to political systems for action – the more likely we will be to create an environmentally sustainable world. It focuses on learning about the natural systems, such as the water cycle and food webs, to understand how they work. There is also often an emphasis on learning about the detrimental impact of humans on nature (Fraser et al., 2015; Sobel, 1998). Environmental education can happen in the classroom or outside the classroom and can be based on the local environment or distant places as long as it is about the environment.

Experiential education. Another branch of the ecological place-based river is that of experiential education. Within Sobel's definition of place-based education there is reference to active engagement within local community for learning (Sobel, 2005). Experiential education, like environmental education, has its roots in nature study, outdoor education, and the progressive education movement in general. John Dewey wrote often of the importance of embedding the curriculum within the local society (Dewey, 1897; Dewey as cited in Woodhouse & Knapp, 2000) and programs such as Outward Bound (Ingman, 2013) and the Foxfire curriculum provide frameworks for using the local community as a place for learning experiences to happen (Smith, 2016). Outdoor education can also be located within this same branch. LB Sharp, who is thought to have coined the phrase "outdoor education" includes in his definition a direct link to experience and hands-on learning. He writes, "That which can best be learned inside the classroom should be learned there. That which can best be learned in the out-of-doors through direct experience, dealing with native materials and life situations, should there be learned. (Sharp as cited in Ingman, 2013).

Ecological place-based education clearly draws on this approach to education, which would be considered education *in* the environment. In many ways experiential education is necessarily place-based education, be the "place" the immediate classroom or the wilds of the backcountry. However, as the name implies experiential education focuses more on the experience than necessarily *where* it happens, although most often a connection to place is created and nurtured during these experiences, intentionally or not (Burgert, 2013; Ingman, 2013). Experiential education can be fully integrated, as at the School of Environmental Studies in Minneapolis (School of Environmental Studies, 2015) or one-off experiences insides or outside of school, such as a nature camp or high ropes course (Ingman, 2013).

Education for sustainability or sustainable development. Just over a decade ago the United Nations declared 2005 to 2014 the Decade of Education for Sustainable Development. This movement drew on the Brundtland Report's definition of "sustainable development" which is defined as meeting the needs of the present generation without compromising the needs of the future generation in perpetuity (Brundtland, 1987). Sustainability is the concept of enough for all, forever, in other words, and this was, in fact, the motto of Desert School. Although this idea is not new and is in fact foundational to many indigenous cultures (Kimmerer, 2002), it has become a critical catchphrase in this time of rapid development and change across environmental, pollical, and economic systems. Education for sustainability is often considered to be "beyond environmental education" (UNESCO, 2005), moving from education about the environment and in the environment, to education *for* the environment (Tilbury, 1994). More recently McConnell (Moroye, 2007; Tilbury, 1997) incorporated the idea of education "with" the environment, further expanding the scope of this type of education towards the interactive nature of the ecological. This approach focuses on the three pillars of sustainability described as some variation on environmental, social, and economic systems: people, planet, and profit; ecology, economy, equity; environment, business, society (Sterling, 2001). Education for sustainability is as complex as the systems and pillars that support it, and it is becoming increasingly easier to find many and diverse curricula, schools, and governments that are beginning to adopt EFS as their theoretical framework (Esa, 2010; Green, et al., 2016). Some focus heavily on the concepts of ongoing sustainable development and progress that balances the environment with innovation and technology; others will declare that a new definition of progress and development should be considered in light of ecological sustainability and global change (Wessels, 2013).

Ecological education. Another branch of the river is ecological education, which expands upon the traditional forms of education about, in, and for the environment, as described above, to also include education *with* the environment (Fraser et al., 2015; Hodgkinson, 2011; Moroye, 2009, 2011). Ecological education "[emphasizes] the inescapable embeddedness of human beings in natural systems" (Smith & Williams, 1999, p. 3). Ecological education is interdisciplinary and holistic, based on the integrative principle of ecology (Orr, 1992). It interprets ecological concepts such as interdependence, relationships, cycles, and flows, through multiple lenses, from the scientific to the cultural to the historical and beyond. Ecological education also intentionally calls on the emotional and heartfelt aspects of education (Cajete, 1994; Kimmerer, 2002). Ecological educator David Orr writes that "affinity is the beginning point for the sense of kinship with life…This is to say that even a thorough knowledge of the facts of life and threats to it will not save us in the absence of the feeling of kinship with life of the sort that cannot entirely be put into words" (1992, p. 87). Ecological educators will also emphasize the importance of a deep connection to place as a critical component to this approach to education, with some even suggesting that those who are not deeply rooted are displaced (Gruenewald, 2008; Orr, 1992). As someone who moves often to new places, I can suggest an alternative to this particular interpretation: ecological education is an approach that allows one to connect deeply with a place, through the people, culture, and landscape, *even if they are not from there*, even if they are only just developing their ecological consciousness and learning to love or otherwise have faith in it (Leopold, 1949; Morris, 2002; Orr, 1992). As Barbara Kingsolver writes, “Our greatest and smallest explanations for ourselves grow from place, as surely as carrots grow from dirt…Among the greatest of all gifts is to know our place” (as cited in McKibben, Ed., 2008, p. 947).

Towards a complete picture. After a painter has built their frame and stretched their canvas, what then? After they know the names of the pieces and how to put them together, what next? How did Georgia O’Keeffe move from many and diverse sketches to their integration into one painting? What should educators do with the overlapping and complementary versions and definitions? Orr has named the most critical outcome of ecological education “ecological literacy,” which he defines in many ways as “the ability to ask…what then?” (Orr, 1992, p. 85). In other words, ecological literacy means that we take all of the skills, knowledge, understanding, attitudes, and emotions and examine how they fit together: what patterns do we see, what connections can we make, what picture do they create, what story do they tell? Taking it a step further, ecological literacy is both the reading of the story and understanding how humans fit into this story, now and in the future. “This is a tradition grounded in the belief that life is sacred and not to be carelessly expended on the ephemeral…Ultimately,” writes Orr, “it is a tradition built on a view of ourselves as finite and fallible creatures living in a world limited by natural laws" (1992, p. 95). For the educator and the artist, this is the beginning of the journey from bundles of pine and rolls of linen to a work in progress, even if the method varies or the river branches. As will be described further in Chapter Four, this path toward ecological literacy is not straight forward and it is certainly not easy. Ecological place-based education a work in progress, an answer to the question "what then." It is a movement towards ecological literacy and a more just and sustainable world. It may not be the end, but it is a start.

Art Lesson 3: Sable and Indigo - How to Paint a Vision

For years I painted with whatever brushes I could find. Jude taught me that as long as I took care of them, even the cheapest brushes in a caring hand could make beautiful work. When my grandmother died, I inherited her paintbrushes, and suddenly my collection increased in number and quality. Now when I relocate from place to place as I often do, I make sure to carry this piece of home with me wherever I go. My grandma painted with oils and sometimes watercolors, so most of the brushes are made of sable hair, the best for those styles of painting. Over the years, I added a few brushes of different shapes as I've learned my preference, but my favorite are still those that Nany left for me. Many of them are covered in paint, both hers and mine at this point, and most have her name, in her handwriting, taped to the handle: *Peggy, Peggy J, Peggy SP.* This set of brushes is accompanied by an assortment of paints, mostly acrylics and watercolors, though I have a collection of oils stashed somewhere in the back of a closet. Anytime I begin a painting I spend a moment reflecting: What am I trying to create? What paint will I use? What brush will I need? Once the canvas is ready, there are still decisions to make regarding brush shape, bristle type, the shape of the stroke line, the contents of the paint, the primer on the canvas. Inspired by Georgia O'Keeffe's practice of deeply exploring lines and shapes with a single color, I sometimes pull out only a cerulean blue or deep indigo like she often used, spreading a dab on the mixing tray and practicing with a single color until I can stand it no longer (O'Keeffe, 1988).

Eisner, who often draws on the arts to inform education, writes, "The artist's task is to exploit the possibilities of the medium in order to realize the aims he or she values. Each material imposes its own distinctive demands and to use it well we have to learn to think within it" (2002b, p. 13). In education that "medium" may be as varied as the educator's imagination or as limited as a school resource budget. For example, the medium may include the curriculum, the actual classroom resources, the school grounds, and everything else that makes up the repertoire and routines of a teacher (Eisner, 2002a, p. 155). Georgia O'Keeffe spent hours and hours perfecting the "precise qualities" of her paints and brushstroke, so that her works were of the highest quality possible (Daly, 2016). The literature of ecological place-based education reveals several similarly precise qualities or aims to be set upon by educators, each of which requires different sets of brushes or ratio of pigment to oil to render accurately, or at least honestly. As place-based education draws on and is influenced by the different approaches to education described above, it is important to note that the strands described below are themselves extracted from these numerous frameworks and complementary pedagogies. Like the assortment of brushes in Grandma Nany's cloth case, the strands are an amalgamation of materials needed to achieve certain aims within ecological place-based education. These are the big ideas and concepts that drive ecological educators and give the curriculum shape and texture. These themes came from a close examination of scholarly research, narrative examples, standards and evaluation frameworks, a broad reading of ecological writing, including poetry, prose, and creative non-fiction, and my own personal experience as an ecological place-based educator. The strands, though described individually, are most definitely interconnected and mutually supportive. They are ecological knowledge and understanding, environmental action and behavior, and environmental mindedness.

Ecological knowledge and understanding. The first theme to emerge is perhaps the most obvious and well referenced. This is the paintbrush one reaches for most often, with finger holds worn into the handle. Ecological place-based education and its many variations all emphasize the importance of developing and expressing ecological knowledge and understanding. These are the most often evaluated “measure” of ecological literacy: a student or teachers knowledge of ecological concepts (Stone & Barlow, 2005, Introduction), the ability to define or describe words and concepts related to ecology or sustainability (Liu et al., 2015; Pe’er et al., 2007; Puk & Stibbards, 2012; Timur et al., 2013), and their recognition of natural systems, especially from a scientific perspective (NAAEE, 2017, 2019).

The literature around teachers’ and students’ ecological knowledge centers mainly on educators’ *lack* of ecological literacy or low self-efficacy about teaching environmental topics (Chawla & Flanders Cushing, 2007; Esa, 2010). Studies have found that in general teacher knowledge about the environment and ecological concepts is low, with certain educators, such as those with a science background, scoring only slightly higher on environmental literacy surveys (Puk & Stibbards, 2012; Timur et al., 2013). Studies around students tend to focus on their development of certain environmental knowledge as a measure of academic achievement, again often linked to science and math (Lieberman & Hoody, 1998; Watt & Bautista, 2016). Understandably this topic may be most frequently referenced because it is familiar, and easily linked to state and national standards, for example (Wurdinger, 2017). Examining ecological literacy as it relates to defining photosynthesis or recycling is a more straightforward way of evaluating ecological literacy than observing teacher intentions, practices, and beliefs (Hodgkinson, 2011; Moroye, 2007) or collecting complex, interdisciplinary examples and narratives of students and teacher doing place-based education (Demarest, 2015; Gruenewald & Smith, 2008; Sobel, 2005). It is also deeply connected to the original aim of environmental education as a process of developing skills and knowledge about the environment (Lieberman & Hoody, 1998) in order to support and drive environmental action and behavior. Ecological knowledge and understanding are important tools of place-based education. Without a basic, if not in-depth, understanding of natural systems, interdependent relationships, cycles and flows, and dynamic balance, one may be less likely to act on ecological beliefs (Stone & Barlow, 2005).

Environmental action and behavior. Along with developing ecological knowledge and understanding, much of the literature surrounding ecological place-based education reflects a theme of developing a conservation or “land ethic” in students, a deeply felt conviction to use one’s actions to care for the earth. This land ethic, as Leopold describes it, is not just about the head – the environmental knowledge – but also about the heart and the hands (Orr, 1992). Leopold writes, “A land ethic, then, reflects the existence of an ecological conscience, and this in turn reflects a conviction of individual responsibility for the health of the land” (1949, p. 221). Ecological place-based education aims to develop students and teachers who live out a land ethic, engaged in the local community, contributing to the well-being of the people, places, and land around them by creating opportunities to take action (Sobel, 2005). Green et al. (2016) discuss how, for environmental action to take place, there needs to be a connection between environmental values and personal beliefs in one's ability to impact change. Environmental self-efficacy, for teachers and students, develops through several variables, including not just talking about but actively practicing environmental action strategies at appropriate developmental levels (Hungerford & Volk, 1990; Sobel, 1998).

The North American Association for Environmental Education (NAAEE) guidelines for excellence state that the "learner is an active participant" and instructors should provide students with "early and continuing opportunities to act as a means to deepen the knowledge (2019). Powers evaluated four PBE programs and found that each program considered "enhanced stewardship behavior" and "increased civic participation" as explicit goals of their curricula (2004, p. 19) and Sobel's definition of PBE includes the words "civic engagement." Unfortunately, this characteristic of ecological place-based education is like the tub of paint that is never opened or that really beautiful watercolor technique you learned years ago, but never try on your own (Chawla & Flanders Cushing, 2007). The cause of this disconnect between environmental knowledge and environmental action is not always apparent. Lack of environmental knowledge may hinder a teacher or student's ability to "translate pro-environmental attitudes into responsible environmental behavior" (Pe'er et al., 2007) because there is a disconnect between a belief and knowledge of the consequences of our actions and behaviors (Hungerford & Volk, 1990). For example, educators may teach about sustainability, the environment, and ecology, and yet show up to class every day with their coffee in a throwaway cup from Starbucks. Similarly, students may be able to explain what sustainability is or how the greenhouse effect works and is being impacted by humans and still fail to recycle. Many studies show that without opportunities and guidance to put knowledge into action, environmental knowledge does not necessarily transform into ecological behavior or a commitment to serving their local community (Chawla, 1999; Chawla & Flanders Cushing, 2007; Green et al., 2016). Howley et al. (2011), found in one case study that a condition supporting the implementation of PBE is providing students with opportunity to develop their environmental skills through action and inquiry. Similarly, a study of teachers in Taiwan found that elementary teacher showed greater environmental literacy than high school teachers, which surprised the authors. They surmised that this correlated to Taiwan elementary teachers' greater degree of *practice* implementing environmental education in their classes, as per government requirement (Liu et al., 2015). While Demarest (2015) provides some helpful tools and suggestions for teachers wanting to include environmental action and community problem solving into their planning, and others have collected myriad narratives of place-based education in action (Anderson, 2017; Gruenewald & Smith, 2008; Haladay & Hicks, 2018; Sobel, 2005), teachers express that there is a lack of concrete guidelines and supports for planning and implementing the action oriented characteristic of ecological place-based education (Hodgkinson, 2013; Powers, 2004). Without these guidelines and supports, teachers tend not to emphasize the action part of place-based education, like a painter with a head full of ideas and no brush.

Ecological mindedness and wonder. Georgia O’Keeffe is quoted in myriad places expressing that she painted flowers the way she did – up close, large, abstracted and fragmented – to draw our attention to what we otherwise miss in the rush of our daily life. She explains, “When you take a flower in your hand and really look at it, it's your world for the moment. I want to give that world to someone else. Most people in the city rush around so, they have no time to look at a flower. I want them to see it whether they want to or not” (personal notes from trip to Georgia O’Keeffe Museum). O’Keeffe’s personal sense of wonder and connection with the landscapes around her – especially the American Southwest – were a driving force behind her art, along with the desire to inspire curiosity for the world in others. Like O’Keeffe painting what others would otherwise fail to see, the art and craft of some educators is guided by a foundational, if sometimes unacknowledged, desire to bring to light unnoticed connections related to ecological systems and the land around them. These qualities of ecological mindedness, such as ecological care for self and others, a recognition of interconnected relationships between humans and nature, and an ecological integrity or wholeness to their beliefs and actions come to life through the brushstrokes of ecologically minded educators (Moroye, 2007; Moroye & Ingman, 2013). Of all the tools within the artist’s grasp, are there any more important than a sense of wonder and curiosity for the world around us? What would the artist paint if they had not a care for something or someone or an appreciation of the aesthetic and interconnected nature of life on Earth?

Louise Chawla has spent her career looking into the circumstances that bring about environmental behaviors and ecological mindedness, from simple behaviors to big civic action projects, from lifestyles to livelihoods. Chawla and others have found that perhaps the two most important impacts on developing environmental behaviors are time spent in nature and the presence of a caring mentor who shares their passion for the environment (Chawla, 1999; Louv, 2005; Sampson, 2015). David Sobel explains that through place-based education student take time to explore what is in their backyard – what they may have been rushing by every day on their way to the playground or soccer practice – they learn to connect with places in which they love, what is often called developing a sense of place. He expresses a sentiment echoed by many other environmentalist and educators throughout the years: that before being asked to save a place, one must learn to love it, to care for it, to ultimately be connected to it (Leopold, 1949; Orr, 1992, 2004; Sobel, 1998). Rachel Carson described the importance of cultivating a sense of wonder within a child through time spent outside "in storm as well as calm, by night as well as by day, and is based on having fun together rather than on teaching" (1965, Kindle Loc. 25). Her richly descriptive stories of time spent exploring the world with her young nephew have been inspiration for many environmental educators since its publication, and yet this aspect of environmental education is often lost in the hard sciences and doom and gloom portraits of life as we know it (Sobel, 1998). As Smith (2002a) explains, place-based education creates a sense of curiosity and wonder for the environments around us while providing authentic rationale for wanting to develop ecological knowledge and take environmental action. He writes of Steve, a student experiences place-based education for the first time through wetland mapping, saying, "I'd always thought I was computer illiterate. But I got into making map overlays….and it was like 'Wow! This stuff is really interesting…it sparked new ideas of what I could do in the future" (Smith, 2002a, p. 33). His excitement for the ecological systems around him and desire to tell the story of the local wetlands to the government leaders through maps drove his curiosity about forms of knowledge he had previously overlooked. Suddenly, something that he had rushed by for most of his youth, was thrust into his hand: he was forced to look. As Georgia O'Keeffe said (1988), it's hard to ignore the beauty of a flower painted in huge scale.

In offering characteristics of ecological mindedness across the curriculum, Moroye and Ingman state that ecological integrity is "the alignment of beliefs and actions, which materialize as dispositional qualities resulting from a comprehension of interconnectedness and ecological care (2013, p. 604). Ecological integrity is not separate but "an outward manifestation" of the realization of care and interconnectedness, of a sense of wonder and a sense of place. As will be described in Chapter Four and Five, this idea emerged as a defining and surprising theme and evaluative lens within this study. Through local studies, interpersonal and interspecies connections, and the simple act of playing and exploring (Sobel, 2008), ecological place-based education aims to realign beliefs and actions to create a more just and sustainable world. An ecological educator's "palette of possibilities" relies on the precise and varied qualities of the particular paints and brushes of ecological place-based education: ecological knowledge and understanding, ecological action, and ecological mindedness (Demarest, 2015, p. 41).

Art Lesson Four: O'Keeffe and Eisner – How to Be an Artist

For all that could be said of the cloth and the stretchers, of the paints and the brushes, there is another story to be written entirely on the artist and the educator and their work behind the scenes, in the studio or the classroom. Just as one could easily admire O'Keeffe's most masterful pieces and never feel the urge to know more about the person who wielded the brush, the teacher in a classroom is often viewed as the interpreter of standards and activities rather than the creative agent behind an educational experience. Teacher training programs tend to focus on efficiency and effectiveness through pedagogical how-to rather than epistemological why-so. The art of teaching is rarely acknowledged, and this study sought to understand the artistry of ecological PBE by examining the intentions, expectations, and practices of teachers at a new ecological school.

Artistry in teaching is a key characteristic of ecological place-based education that is often taken as a given. Along with the responsibility for cultivating the qualities of ecological knowledge and understanding, environmental action and stewardship, and a sense of wonder and ecological mindedness, there is an underlying assumption that the place-based educator is an artist, a designer, and a creator of meaningful and beautiful work. Amy Demarest's research on place-based education weaves the idea of teacher-as-artist throughout her description of the approach. She describes how teachers, like artists, apply both theory and practice to their art, drawing on different colors to create different scenes. Of place-based education in particular she writes, "This is a creative journey for the teacher that involves new ideas, reading, and conversations with colleagues as well as the ongoing integrations of past and present experience, personal values, and professional training" (Demarest, 2015, p. 5). Place-based education scholar Gregory Smith writes that teachers doing place-based education must "become creators of curriculum rather than dispensers of curriculum developed by others. They must be able to make the link between the unpredictable activities [that arise in PBE] and student performance standards set by the district or state" (2002b, p. 594). In other words, teachers must walk the line between art and craft, between spontaneous creation and determined expectations, between innovation and familiarity. As further described in the next section, Eisner described this aspect of artistry as the ability to be responsive in practice and allow the ends (as well as the middle, and arguably the beginning) to emerge.

Other scholars espouse the excitement and exploratory nature of teaching and learning in place. Gruenewald (2002) writes of ecological place-based education, describing it as “an adventure” (p. 537), as he simultaneously champions the importance of teachers being “encouraged to approach their craft with an original mind…that the art of teaching is suffering from a climate of prescription” and place-based education is the cure (p. 531). These examples within the fields of ecological education in general and of place-based education and environmental education in particular allude to the artistry and creativity of the teacher as a key component of implementing this approach to education. This research aims to add another dimension to the literature, with a particular emphasis on the artistry of the new ecological educator.

The artist and the craft. Georgia O’Keeffe’s works can be described as vibrant, colorful, and often abstract. The images she created look organic and flowing, full of contours and colors so finely blended it is impossible to tell where one ends, and another begins. It is possible to imagine a sort of spontaneity and playfulness in the swirls and lines reaching from one end of the canvas to another. Yet to read O’Keeffe’s writing or study the artifacts of her life – her painting materials, her notebooks, and voluminous letters to friends and colleagues – reveals a meticulous and highly trained professional who “believed in the mastery of materials as the foundation for expression and style” of the sort we know so well (Daly, 2016). She annotated painting with colors in precise locations and tested every pigment in numerous ways before ever laying it down on the canvas. She created draft after draft, destroying anything she deemed imperfect, until she determined she captured what she imagined in her mind on paper. At times, the perception of the whimsical or impulsive artist seems antithetical to her precise and practiced technique. And yet it was in this mastery of materials that she found her own voice. In *Some Memories of Drawings* O'Keeffe described how she once gave up all colors until she "couldn't get along without it" (O'Keeffe, 1988, n.p.). She then stopped painting and spent half a year experimenting with the basic materials she had been taught to use in order "to start to say the things that were my own" instead of "doing what had already been done." Like a professional educator, Georgia O'Keeffe was well trained in her craft. She knew which paints to use to get a certain finish, which brush shapes would produce the texture she desired. Yet it is when she decided to start applying these tried and true techniques in new and unfamiliar ways that O'Keeffe became O'Keeffe (Daly, 2016). The experience at Desert School, as will be described and interpreted in Chapters Four and Five, was a study in educators – myself included – learning new techniques and attempting to put them into practice, trying to master our own materials.

Eisner provides a view of the art of teaching that echoes O'Keeffe's journey from craftsperson to artist. He writes, "It is precisely the tension between automaticity and inventiveness that makes teaching, like any other art, so complex an undertaking" (2002a, p. 155). Eisner's work is particularly important within this study as many of the teachers I worked with had little experience in crafting their own curriculum or carrying out anything resembling ecological place-based education in the past, and yet they were each experienced classroom teachers in their own right. If teaching is indeed an art, then there will be artistry and artistic judgements to observe and evaluate as our teachers apply familiar materials in new ways. I used Eisner’s four-part framework of the art of teaching as a point of entry into and guide through the connoisseurship and critique of the art of ecological place-based education in action. Eisner describes the four senses of the art of teaching: the experience is aesthetic; judgements are responsive; the practice is inventive and creative; the ends are emergent. In the following section I will explicate these four senses as well as provide connections to other scholarly work around artistry, education, and place-based teaching and learning.

The experience is aesthetic. Eisner explains that teaching is an art when what the teacher does is performed “with such skill and grace” that the experience is complete in and of itself, for the teacher and the students alike (2002a, p. 154). Dewey describes aesthetic experiences as those that have continuity and interaction with life beyond the classroom walls (Rogers, 2014). Goleman, Bennett, and Barlow (2012) describe the transformational and aesthetic experience had by several high school students during a trip to coal country, where mountaintops are removed to quickly and cheaply provide coal for electricity throughout the rest of the United States. Through an orchestrated series of visits and events, the students experience first-hand the impact of mountaintop removal as well as their connection to the destruction, previously invisible to them. The aesthetic, consummatory nature of this experience is the sort of artistic teaching Eisner describes. In this sense, artistic teaching is a performance in which what happens in class (or on a school trip) draws on and is interwoven with students’ life experiences – past, present, and future – and personal beliefs beyond the school day or a specific lesson. This is an important quality to strive towards in ecological place-based education. Moroye and

Ingman (2013) make a clear connection between aesthetic, educational experiences in general and the goals of environmental and ecological education in particular to "inform behaviors *outside* of school perhaps more so than *in* school" (p. 591). Artistic teaching is inherently aesthetic – continuous and interactive –helping students make connections to life beyond the classroom in the greater landscape of the places they live (Dewey, 1934).

The judgements are responsive. Eisner describes a second sense of artistic teaching related to a teacher's ability to make judgements based on the situation at a given moment and adjust their actions accordingly. He describes how teachers, like orchestra conductors, facilitate the conversations that move across a room, responding to what we see and hear (or don't see or don't hear) as we attempt to "give the piccolos a chance" and "provide a space for the brass" (Eisner, 1983, p. 11). Place-based education, by nature, requires at least a bit of responsive teaching, even in the most controlled settings. Inevitably, bringing students out into the field introduces unexpected variables, from quick changes in weather to where to find a bathroom to how to collect water samples when the river froze overnight. In all of these instances, the teacher must respond to the situation. Responsive judgements are based on educational theory, content knowledge, and pedagogical experience and expertise, but are also guided by intuition, practical wisdom, and judgement artistry (Fish, 1997; Fish & De Cossart, 2006). Artistry in teaching is the ability to make decisions in the moment, to know when to try something new and when to draw from the tried and tested techniques (Rubin, 1983). We see this balance between innovation and automaticity (Eisner, 2002a) within O'Keeffe's work, where there is a repetition of certain lines, shapes, and colors, but often used in new combinations (Daly, 2016). Without the artistry of responsive judgements and creative adaptations, a teachers' practice stagnates into rehearsed lines and color by number teaching. How teachers use their artistry to make decisions in the moment is a driving aim of this research. Analysis of several of these aspects, such as content knowledge and pedagogical expertise, as they relate to teacher artistry will be presented in Chapter Five.

The practice is inventive and creative. A third sense of artistry in teaching in Eisner's framework describes the practice of teaching and learning as both grounded in experience and routine, but also "influenced by qualities and contingencies that are unpredicted" (2002a, p. 155). It is in this sense that there is a clear echo of O'Keeffe's colorless period, in which she immersed herself in the materials so as to learn to use them in new and creative ways, all her own. Eisner always clarifies that the artistry of teaching relies upon deep knowledge of one's subject, one's students, and oneself, along with the theory and practice of teaching. At no point does he suggest that just anyone can teach artistically. He explains that like a performer, teachers must develop their own repertoire – activities, readings, fieldtrips, for example – on which to draw to save energy that goes into planning. It should be recognized that there is artistry in the planning as much as the performance. Eisner also espouses teachers to use their repertoire to plan for the unexpected, and to use their expertise and experience to create new routines and tools from familiar materials. Kaufman and Gregoire explain that, while expertise is not always necessary for creativity, "inspiration favors a prepared mind" (2015, p. 24). The current literature surrounding ecological and place-based education reflects the work of teachers with a full repertoire to work from: connection to place, many years of experiences, and deep knowledge of ecological systems, for example. Artistry in teaching relies on this preparation and sense of automaticity to drive creativity in the practice. Examining how artistry and artistic judgements are expressed in the practice of teachers new to ecoPBE was a focus of this study and will be analyzed in more depth in Chapters Four and Five.

The ends are emergent. The fourth sense of Eisner's thesis of teaching as an art has to do with the ends that teachers keep in mind as they plan and implement their curricula. When teaching is carried out as an art there is an inherent quality of mystery in practice of teaching and learning. Artists and creative problem-solvers often acknowledge the importance of just letting things happen, of cultivating an openness to the unknown and allowing for wonderful ideas to emerge from the materials (Duckworth, 1996; Kaufman & Gregoire, 2015). Artistry in teaching provides room for the outcome to emerge through the process without being hitched unyieldingly to some known end. For many decades now, teaching and learning around the world has focused on efficiency of one kind or another, with the desire for a scientific and efficient approach to teaching and learning driving a never-ending cycle of standards and objectives and measurement and evaluation (Eisner, 2002a; Orr, 1992, 2004; Paterson, Higgs, & Wilcox, 2006). This is not to necessarily say there is no place or need for objectives in art or in teaching. Even project-based learning, an inherent aspect of place-based education, often encourages teachers to "plan with the end in mind" (Demarest, 2015; Wiggins & McTighe, 2005). As Eisner writes, "When clearly defined goals are lacking, it is impossible to evaluate a course or program efficiently" (2002a, p. 110). Ralph Tyler clarifies his view of the role of objectives as guides to teaching and learning, not boxes to tick, as has often been the interpretation. Tyler repeatedly underscored the necessity of using them *alongside* a teacher's judgement of the emergent situation and their personal creative approaches to education (Tyler & Hlebowitsh, 2013), a fact which is often overlooked in the move towards efficiency and scientific teaching. Eisner, in explicating this sense of artistry in teaching, quotes art historian H.W. Janson, writing, “Artists are people who play hide-and-seek but do not know what they see until they find it (Polanyi & Prosch as cited in Eisner, 2002a, p. 155).

Even the best planned place-based education is emergent in nature given its direct connection to other living things and dynamic systems. Sometimes guest speakers share surprising content that takes the project in a new and unplanned direction or a surprising experience inspires a new form of expression requiring a different and unplanned evaluation or project outcome (Eisner, 1994). How teachers respond to these emergent ends is reflective of their artistry in practice.

As explained in Chapter One, within this study, creativity can be thought of as the way an individual uses their skills, knowledge, and personality to do something differently or produce something novel and useful in a particular field (Csikszentmihalyi, 2013; Kaufman & Gregoire, 2015) or at the least to discover something new *for themselves* through action (Eisner, 2002a). Artistry may be thought of the way in which an individual uses their skills, knowledge, and personality to carry out a task or respond to a situation with grace, intellect, intuition, imagination, and flexibility (Eisner, 2002a, 2002b; Rubin, 1983). Through this research I examined not only the intentions, expectations, and practices of teachers as they develop the key qualities of ecological PBE within curricula, but also considered the ways in which the art of teaching, as artistic judgements and creative attitudes came into play in their practice.

Art Lesson Five: Magic and Reality – How to Tell a Story

When I was little, my grandma – the same one whose brushes I now use – used to start many stories with, “Now, when I was a little boy…” Quickly my brother or I would say, “Nanny! You are a lady! You would have been a little *girl!”* But my grandma would just shake her head and start her story again, “Now, when I was a little boy…” and while she told her tales, my brother and I would have to suspend our belief in the world as we knew it, picturing our lovely Nanny as a little boy running through the streets of Chicago or swimming in the waters of Lake Michigan. To this day, I am unsure of why she started her stories in this way. I suspect it was to be playful, to challenge us to think, and to place a bit of doubt in our minds as to the nature of reality.

In writing this dissertation, I took a page from Nanny’s playbook and attempted to tell a cohesive and believable story based on the situations and experiences I observed and had while at Desert School, but with some of the elements changed in such a way as to blur the line between reality and fiction. What emerged in the writing was a descriptive dimension in which I experimented with magical realism as the literary mode for presenting the findings. While magical realism is a popular form of fictional writing (Bortolussi, 2003; Mariboho, 2016), and I have a particular leaning towards this form of literature in my own reading preferences, I have never before used it in my writing. I came to use it more intuitively than intellectually, and I found that it helped me to tell the stories of the teachers and myself at Desert School more honestly and fully. Encouraged by my advisor, I sought to “know its contours, to understand why it is a thing”

(McConnell, personal communication, 2020). I had to give myself my own art lesson in magical realism, to better understand what it is and why we have it.

Origin stories. While most people connotate magical realism with literature – books about boys with pigs' tails and girls who can fly (Castillo, 1993; García Márquez, 1978), for example – the term was coined by Franz Roh, a German art critic in 1925 (Zamora & Faris, 1995). Roh invented the term *magic realism* to describe the painting style that was emerging in the post-expressionist era. After the focus on composition and lines and the abstraction of objects during the expressionist era, artworks were shifting towards "a new style that is thoroughly of this world, that celebrates the mundane" (Roh, 1995, p. 17). Roh suggested that this style emerged from a tiredness with the exaggerated and at times "horrific" elements of expressionism in order to "reintegrate reality into the heart of visibility. The happiness of seeing again, of recognizing things [entered]" (Roh, 1995, p. 18). And indeed, for Roh and the magic realist painters, their focus was on bringing the ordinary into focus but in such a way as to make the familiar seem strange (Greene, 1988; Uhrmacher, et al., 2017).

To do so, magic realist painters mixed techniques from the previous periods of realism and expressionism to create a technique that "endow[ed] all things with a deeper meaning and reveal[ed] mysteries that always threaten the secure tranquility of simple and ingenious things: excessively large bodies lying with the weight of blocks on a skimpy lawn; objects that don't imitate the least movement but that end surprisingly real, strange mysterious designs that are nevertheless visible down to their smallest details!" (Roh, 1995, p. 17). In one painting a man sits in a chair with a cigarette burning in the background. The details of the painting itself are precise, down to the wrinkles on his forehead, but there is a distinct lack of perspective throughout the picture: a table lies at a strange angle, the rug appears to be on the wall (McKinney, 2014). In other paintings, large bodies are placed in the foreground, making them appear gigantic in an otherwise typical landscape. In another example a natural landscape is painted with such painstaking detail *from memory and inside the artist's studio* as to force the viewer to wonder at its realness, even though it is only from the mind of the artist (Zamora & Faris, 1995). As I understand it, the aim of magic realism in painting was to walk fine line between reality and fiction, reconciling that which we imagine with that which we know, while drawing out the essence of the object, setting, or idea being put down onto the canvas. As Roh wrote, "The new position, if it survives, will exist on a middle ground not through weakness but, on the contrary, through energy and an awareness of its strength. It will be a sharp edge, a narrow ledge between two chasms on the left and right" (Roh, 1995, p. 23). Roh considered magic realism as an "intuitive way" of representing "the fact, the interior figure, of the exterior world" (Roh, 1995, p. 23). By employing magical realism within this educational criticism and connoisseurship study, I aimed to walk a similar line, presenting the findings of in-depth qualitative, social-scientific research with a form of representation that calls on the imagination and heart as much as the mind.

What is particularly interesting and important to note is that magical realism, like educational criticism, is deeply rooted in art criticism. As described above, it was an art critic, Franz Roh, whose appreciation of both the subtle and obvious distinctions between expressionism, realism, and the emerging art form (eventually named magical realism) introduced the concept of "celebrating the mundane" to the world through art. Magical realism, Roh described, hung somewhere between "the world of dreams and adherence to the world of reality" (1995, p. 17). Overtime, the term magical realism was adopted into literature, where it was more fully developed as a literary mode and rhetorical strategy allowing writers to examine and critique society through imaginative rhetorical devices and fantastical, yet intriguing, situation (Zamora & Faris, 1995).

One aspect of magical realism I see pulsing through the heart of educational criticism is related to the "irreducible element of magic" (Faris, 2004, p. 7). The magic in magical realism "does not brutally shock but neither does it melt away, so that it is like a grain of sand in the oyster of realism" (Faris, 2004, p. 8). It is purposefully integrated into a story so as to "disrupt reading habits…[increasing] the participation of readers, contributing to the postmodern proliferation of writerly texts co-created by their readers" (Faris, 2004, p. 9). While I am no expert in this mode, I took this to mean that magical realism uses certain elements to draw the reader fully into the text in an attempt to ensure that they interact with the text by forcing the reader to stop, look around, and even feel a bit disoriented before diving back into the text for better understanding.

While educational criticism beyond this dissertation (that I am aware of) does not include a specific "irreducible element of magic, it does aim to make the familiar strange in such a way as to encourage the reader to look, then look again (Uhrmacher et al., 2017) through comprehensive and evocative literary description, thoughtful interpretation, and evaluation that surprises and draws out new meaning. The heart of educational criticism, as I see it, similarly intends to disrupt our typical reading patterns of educational situations, to "increase the participation of readers" in the actual text in such a way that they are experienced by the reader as if they had been there themselves. Eisner explained how Sizer used vivid writing in *Horace's Compromise* in such a way that "one sees in these scenes images of the past. For those who have attended American high schools…the picture that Sizer paints is congruent with our own experience" (Eisner, 2017, p. 128). In doing so, he breaks through our typical patterns of seeing so that we might "ask fresh questions" which lead to new theories, new ways of thinking, and even more questions that might help us make meaning within educational situations (p. 128). In Eisner's own educational criticism describing and interpreting a visit by the Secretary of Education to a high school classroom in Washington, D.C., we are imaginatively encouraged to see the Secretary as a boxer in a ring "his intensity is fierce; he paces, paces, paces…His eyes dart from side to side. Nothing apathetic here." Throughout the piece Eisner describes the "pedagogical moves" that Secretary Bennett uses throughout his time in the ring, with an athlete's mix of grace and intensity (Eisner, 2017, p. 133-134). Like the magic in a magical realism text, this type of vivid imagery excites me as a reader, grabbing my attention and imagination in a way that has me reading more deeply, asking questions, engaging with the text and even "co-creating the text" with Eisner over 35 years later (Faris, 2004, p. 9).

Magic and place. Magical realism as a literary device is now employed all over the world although it is often thought to be distinctly linked to the Americas in its initial elaboration. What Roh described as magic realism with regards to the visual arts, specifically painting, was, over time, absorbed into Latin American literary circles to describe the "uniquely American form of magical realism" (Zamora & Faris, 1995, p. 75). Batra (2015) suggests that an initial essay by Angel Flores in 1955, linking the term magical realism to "Spanish American Fiction," may have helped draw attention to the use of magical realistic styles within Latin American literature. Within literary criticism, Alejo Carpentier, a Cuban novelist known for his use of magical realism, proposed the term lo real maravilloso americano *(*the marvelous American reality) as a means of emphasizing the specific style of writing being brought forward by Latin American authors. Unlike the European surrealist movement, which aimed to bridge the gap between the conscious and unconscious mind through bizarre and often unrealistic imagery (both visual and literary), lo real maravilloso americano aimed to provide a space where the bizarreness inherent in reality – and more specifically the reality of Latin America – could be amplified (Zamora & Faris, 1995). The purpose of this was to show that the world as it is "is not all rational or reason-based" by making sure that the "realistic story takes a magical turn at times (Batra, 2015, pp. 56 and 58).

For Carpentier and many other Latin American magical realist authors, the truth of life in Latin America was often stranger than any fiction they could create, especially for outsiders unfamiliar with the nature, culture, and politics of the region (Zamora & Faris, 1995). Take for examples the green jungles that forever creep over the land like so many fast-moving snakes or trees coated so heavily with butterflies that branches break and tumble to the ground or fish that knock insects from the sky with fountains of water; all these are real examples of the ecology of Latin American. Skattebo, in his dissertation examining magical realism through an ecocritical lens, demonstrates that many magical realism authors attribute the originals of Latin American magical realism to the writings of explorers such as Columbus (Colón, in Spanish) in their first explorations of the "new world" (2000). He writes:

> García Márquez claims that Latin American reality has a magical quality, which was captured in the beginnings of Latin American literature by the chroniclers, who wrote seemingly unbelievable things but yet were very close to the realities that surrounded them. According to García Márquez, the Diario de Colón (Diary

> of Columbus) is the first work of literary magic of the Caribbean (Olor 74, as cited by Skattebo). Colón struggled with understanding the new world he encountered, and this initial attempt at grasping this 'unique' nature evolved over the centuries into a quest for the expression of Latin American identity (Skattebo, 2000, pp 35-36).

In trying to make sense of what they saw, Columbus and similar voyageurs to the Americas wrote descriptions of places and things that might seem otherworldly, especially in our modern era in which real-life images – not just descriptions – of newfound beauty can be shared instantaneously across the world.

The Latin American magical realists similarly recognized the remarkable features of their places, their cultures, and their natural environments, and brought them to the forefront of their literary works. Zamora and Faris emphasize that for Carpentier and the magical realists of the Americas, "the fantastic is not to be discovered by subverting of transcending reality…rather, the fantastic inheres in the natural and human realities of time and place, where improbably juxtapositions and marvelous mixtures exist by virtue of Latin America's varied history, geography, demography, and politics – not by manifesto" (1995, p. 75). In other words, whether or not it was written about or publicly declared could not diminish the fact that the magical was simply a part of the reality of life in Latin America. Magical realism, then and now, aimed to draw from the "marvelous mixtures" already in existence in that place to create something both fantastic and convincing. I did not decide to use magical realism because of these place-based aspects; as will be described more in Chapter Five, I arrived at this decision rather spontaneously. It is possible I could attribute this decision to some sort of latent familiarity with magical realism collected over the years as someone who grew up in North America and has been studying Spanish language for thirty years, visiting Central and South America for almost twenty years, and reading magical realism in some capacity for most of my life. Understanding the connection between this method and place – as seen in the ecologies, peoples, and practices of a place - helped me to more fully tell the story of Desert School.

Writing from the margins. Of course, magical realism did not stay within the boundaries of Latin America. Authors around the world, such as Toni Morrison, Salman Rushdie, Linda Hogan, and Amitav Ghosh to name only the smallest handful, have employed this literary mode to push readers to imagine different realities (Faris, 2004). The purpose of magical realism was, and still is, to make meaning from the absurdities, contradictions, and diversities that permeate so many aspects of real life, and this form is useful to authors the world over. Sometimes this might be done through imaginative, clearly fictive elements, such as folded paper butterflies that take flight when released into the wind (García Márquez, 1970). Other times the element of magic is called out simply through the accentuation or elaboration of the eccentricities and improbabilities that exist in the recognizable world, such as a tornado that unbelievably touches down on only one block of one street, leaving the rest of a city in perfect condition (Ghosh, 2016). In particular, magical realist writers often turn to this style to draw attention towards possibilities we have not yet considered, even if they were in fact right in front of us. By emphasizing the magic within reality, we are forced to look again with fresh eyes. Within educational philosophy, Greene writes of a similar need to “break with the ‘cotton wool’ of habit…to seek alternative ways of being, to look for openings” (1988, p. 2). Instead of letting things be as they are, magical realism, like education reformation, pushes against the status quo. Like educational criticism, magical realism forces us to look closer at things we would otherwise overlook because they are not the typical focus of our everyday concerns. As Zamora and Faris (1995) write, “In magical realist texts, ontological disruption serves the purpose of political and cultural disruption: magic is often given as a cultural corrective, requiring readers to scrutinize accepted realistic conventions of causality, materiality, motivation” (p. 3).

Magical realism, then, can be described as “ex-centric”, not of the middle, but rather as a literary mode suited for the voices at the margins (D’Haen, 1995, p. 194). D’Haen (1995, p. 195, all emphases in the original) argues that magical realist writers push the voices of the marginalized to the forefront “by first appropriating the techniques of the ‘central’ line” – namely the attributes of accepted, centrist prose fiction –

> and then using these, not as in the case of these central movements, ‘realistically,’ that is, to duplicate reality as perceived by the theoretical or philosophical tenets under lying said movements, but rather to create an alternative world *correcting* so-called existing reality, and thus to right the wrongs the ‘reality’ depends upon. Magical realism thus reveals itself as a *ruse* to invade and take over the dominant discourse(s).

As a literary style, magical realism shifts the conversation from the center to the margins, from the accepted reality to the imagined possibility.

It is interesting then to compare magical realism and educational criticism, which Eisner developed as an alternative to the overarchingly, and almost wholly accepted, scientifically and technologically oriented methods of educational evaluation (Eisner, 1976). He proposed that education needed another way of evaluating the “conduct and character” of educational situations (p. 135). Eisner offered educational criticism as a means of expanding the forms of evaluation so that they might better “attend to the qualities of educational life relevant to the arts” and honor the “uniqueness of the particular” often disregarded as “noise” by those wishing to reduce or objectify "knowledge" for the sake of making easily consumable generalizations (Eisner, 1976, pp. 135-138).

While I am no expert in this literary style, and I am very much still learning even as I write this, I believe that magical realism within educational research dealing with ecology and the environment can help draw out ideas and voices that might otherwise be forgotten in the search for rational and scientific understanding. Ecological education sits at the margins of educational enterprise, or schooling, as it might otherwise be known (Greenwood, 2010). I believe, like many other ecological education scholars, that this is at least in part because of our overwhelming disconnect from nature in these current times. There is a deep need to shift our conversations from the center of "an educational system obsessed with test scores and other accountability systems" (Greenwood, 2010, p. 145) towards the margins where "small openings" towards other ways of knowing and being may exist (Greene, 1988; Greenwood, 2010).

Maxine Greene long argued for the importance of fictive literature in the opening up of these spaces for the imagination. She wrote of creating spaces in which dialogue could take place among people with different backgrounds, beliefs, and desires, for the purpose of stretching the imagination beyond the known toward the possible. "Such a space," she wrote, "requires the provision of the opportunities for the articulation of multiple perspectives in multiple idioms, out of which something common can be brought into being" (Greene, 1988, p. xi). Magical realism attempts to create such a space for the marginalized ideas by acknowledging the extratextual "real" world through descriptive words and recognizable imagery, while also incorporating ideas that are in direct contradiction to this "experiential" world as we know it (Wilson, 1995, p. 217).

Wilson recognizes this space as “hybrid” and in doing so argues that “magical realism focuses on the problem of fictional space” as it attempts to contain what is and what could be in one imaginative landscape (Wilson, 1995, p. 210). Like the spaces that Greene imagined as requisite for freedom in education particularly and the world in general, the hybrid landscapes created by magical realism have not only the potential but the aim to open our eyes and ears, and even our hearts, to seeing, hearing, and feeling our way towards better alternatives for a more just world. It is possible that, integrated within educational criticism, magical realism may help us better recognize and imagine possibilities for the improvement of education by helping us to let go (Rezac, 2019), to directly address the subjective, and to look at our findings from a new perspective.

A Final Lesson: Imagining What Could be Otherwise

Elliot Eisner draws attention to the role of the teacher as a practicing artist “guided by educational values, personal needs, and by a variety of beliefs or generalizations that the teacher holds to be true” (2002a, p. 154). Within ecological and environmental education in general, and place-based education in particular, the teacher as artist plays a pivotal role in calling “for the imaginative capacity…to work for the ability to look at things as if they could be otherwise” (Greene, 1995, p. 19). At this critical time in the history of the earth, it is imperative that we begin to recognize the role creativity and imagination can and must play in addressing ecological issues. As Nathaniel Rich (2018) expresses in “Losing Earth,” a breakthrough in the communication between scientists and politicians about the reality of climate and atmospheric changes and their ramifications for life on earth came in the form of art: a video depicting the damaged ozone layer as a “purple hemorrhaging wound.” Rich writes, “An abstract, atmospheric problem had been reduced to the size of the human imagination. It had been made just small enough, and just large enough, to break through" (2018). Maxine Greene has written often and persuasively of the power of the arts to open our eyes, to release the imagination, and to help us to live wide in the face of a complex and dynamic world. She explains, "To call for imaginative capacity is to work for the ability to look at things as if they could be otherwise" (Greene, 1995, p. 19). Orr (2004) suggests that it is the paucity of our imaginations that puts up barriers and limits our ability to act differently, to create the world we know is possible. The importance of artistry in teaching, then, becomes even more important. Eisner writes, "Artistry is important because teachers who function artistically in the classroom not only provide children with important sources of artistic experiences, they also provide a climate that welcomes explorations and risk-taking and cultivates the disposition to play…[and] play opens up new possibilities" (2002a, p. 192). Teachers who express artistry, who play and explore and imagine new worlds encourage their students to do the same, to "reimagine our lives" and to break through barriers of our own making (Lopez as cited in Kingsolver, 2002, p. 39).

CHAPTER III

METHODOLOGY

Overview

"Keep some room in your heart for the unimaginable."
Mary Oliver, from the poem *Evidence*

In order to fully inquire into how educators design and implement ecological place-based curriculum, I employed the research methodology of educational criticism and connoisseurship (Eisner, 1988, 2002a, herein educational criticism). Through this methodology, I sought to appreciate the intentions and practices of three new ecological place-based educators while at the same time illuminating the ecological and artistic aspects of their work as educators. Additionally, I examined my own experiences through the emerging methodology of auto-criticism, employing the same research questions to better understand my intentions, expectations, and the realization of the same.

I took guidance and inspiration from portraiture in the search for "goodness," documenting success instead of only failure, along with what is of value (Eisner, 2002a; Lawrence-Lightfoot & Davis, 1997). Personally and professionally, I am interested in and inspired by research that employs both the artistic and the scientific, specifically for drawing out the voices of the participants, describing and evaluating the findings, and creating an aesthetic whole that is engaging and eye opening. I hope these qualities are present in the final product, and that this work is experienced as a reflection of my scholarship, knowledge, values, and spirit. As an educational critic and connoisseur, I was committed to evaluating and disclosing the findings in such a way as to creatively and artfully offer examples and opportunities for the improvement of education as a means of contributing to creating a more just and sustainable world (Uhrmacher et al., 2017). Finally, I undertook an experiment with the emerging field of auto-educational criticism (auto-criticism) throughout this study as I was interested in examining my personal experiences in this specific setting in my particular role. I believe that observing and describing my experiences as a leader of an ecological place-based school alongside the teachers' classroom experiences with ecological place-based education provides a rich and dynamic narrative to draw on for interpretation and evaluation of this situation from perspectives yet unimagined in ecological place-based education.

This study took place during winter term of 2019, after receiving exempt IRB approval in December of 2018 (Appendices E and F). All participants were purposefully chosen through volunteer sampling at the school site. After gaining IRB approval, I also sought site permissions in early winter term 2019 and participant consent as participation commenced through winter term.

My Conceptual Framework

An interdisciplinary group of artists, scientists, conservationists, and educational scholars have shaped my conceptual framework of ecological and aesthetic education. My particular conceptual framework rests on several thought leaders in particular and is made up of an amalgamation of their ideas which I have collected and incorporated into my own worldview. These have influenced every part of this dissertation, from the topic, to the methodology, to my interpretation and evaluation of the findings. Their collective works provide a scaffolding upon which I have built my own philosophy and practices of ecological education, from the belief in the need for developing both a deep knowledge of natural systems and local place as well as a playful, imaginative, and reverent approach to being in the world. Leopold (1949) described the role of love and appreciation of the environment in creating an ethic of care for the land. Wilson (1984) ascribes the nearly universal human tendency to seek connection with nature and other living things to biophilia. Orr (1992) provides the pedagogical and curricular aspect through his description of ecological literacy and education “with the earth in mind” (Orr, 2004). Moroye and Ingman’s description of the qualities of “ecological mindedness” (2013) helped me develop a theoretical framework to support my scholarly work. Robin Wall Kimmerer and Mary Oliver, in their myriad artistic writings remind me to return to nature as our greatest teacher, and to attempt to tell her stories with grace and reverence. I also look to the work of Demarest (2015) around place-based curriculum design and implementation, expanding upon her oft mentioned recognition of the artistry inherent in place-based education. Elliot Eisner’s framework of teaching as art, as well as my own worldview, helped me draw out this unexamined theme from Demarest’s study on place-based education in action. Eisner’s ideas similarly provide the initial framework for examining how teachers plan and operationalize their curricula. Finally, this study also draws on Moroye’s study (2007) of ecologically minded educators in traditional settings, and in many ways flips her design focus on its head looking at traditional educators in an ecological setting as a means to explore new terrain in ecological education.

Educational Criticism and Connoisseurship

Educational criticism and connoisseurship (Eisner, 1988, 2002a; herein educational criticism) is a method of qualitative inquiry specifically aimed at improving educational practices, particularly through evaluation and action (Uhrmacher et al., 2017). This methodology was developed by Elliot Eisner (1976, 2002a, 2017) to create a research methodology that could be used to specifically guide *educational* research as unique from other forms of social science research. Educational criticism finds its grounding in the work of arts-based critics and draws on multiple forms of representation to both appreciate and disclose what is of value in educational settings (Eisner, 2002a). Within educational criticism, the critic uses a four-part framework of description, interpretation, evaluation, and thematics to express knowledge and create meaning without constraints of more traditional forms of qualitative educational research (Eisner, 2002a; Glesne, 2016).

The Connoisseur and the Critic

Connoisseurship is the art of appreciation and is grounded in the sensory perception and experience of the connoisseur. It is a “private act” (Eisner, 2002a, p. 213) that is guided by the connoisseur’s ability to notice the particulars of a situation and compare them to relevant theories, ideas, and models in order to bring about greater clarity. Uhrmacher et al. (2017) write, “To put this another way, connoisseurs strive to see and hear what they do not expect to find” (Kindle Loc. 516). Criticism is the act of disclosure, the making public of the private (Eisner, 1976, 2002a, 2017). Eisner writes that the job of the critic is to “create a rendering of a situation, event, or object that will provide pointers to those aspects of the situation, event, or object that are in some way significant” (2002a, p. 221). When conducting research through educational criticism, the connoisseur must find a way to express what they appreciate about the situation as viewed through a specific lens or with a particular purpose to others. Criticism is not necessarily negative, as the word is often taken to mean, but instead seeks to value and examine the achievements and educational value of the situation. As Eisner explains, “Criticism…does not impose an obligation to make derogatory comments. Criticism can be laudatory. Its aim is to illuminate a situation or object so that it can be seen or appreciated” (2017, p. 7). Within this study, I seek to appreciate and illuminate what is beautiful, surprising, or otherwise of value to the improvement of ecological place-based education as observed within the intentions and practices of place-based educators at Desert School.

Learning to See and Hear:
Ecological Aesthetics

Eisner conceived of educational criticism as an arts-based approach to qualitative research. Specifically, he envisioned the methodology as an alternative form of qualitative research, addressing his concerns around what he considered “the major issues in qualitative inquiry: generalization, objectivity, ethics, the preparation of qualitative researchers, validity, and so forth” (Eisner, 2017, p. 7). Educational criticism allows the qualitative researcher to examine educational ideas, topics, and problems, while encouraging the critical researcher to employ their own unique ways of expressing knowing and making meaning. Educational criticism specifically applies the connoisseur’s perspective, or lens, to the aim of educational improvement, and in this case, I approach this research as both an artist and an environmental scientist.

Through their chosen lens, the critic actively reflects on both their perception and comprehension of the situation, constantly engaging in a “reeducation of perception” (Dewey as cited in Uhrmacher, et al., 2017). I applied an ecological aesthetic lens to my research. Ecological aesthetics, in the sense that I use it here, pairs the transactional and relational “doing and undergoing” (Dewey, 1934, p. 49) observed in ecological systems with the growth of imagination and sensory perception that is a direct result of these transformative, aesthetic experiences (Moroye & Uhrmacher, 2009). Aesthetic experiences, whether ecological or otherwise, have been described by scholars in various ways: consummatory, compelling, and unified (Dewey, 1934; Pugh, 2004), connected and interactive, with a “sense of vitality” (Moroye & Uhrmacher, 2009), transformative and transactional (Girod, 2007; Pugh & Girod, 2006), and with a buildup and consummation that makes it easy to remember (Dewey, 1934; Pugh, 2002). What all these different descriptions suggest, and what Dewey elaborated in *Art as Experience (1934),* is that an aesthetic experience is distinct from other non-aesthetic experiences; it is continuous and complete in and of itself (Girod & Wong, 2002).

Expanding the idea of aesthetics into the ecological, Finley describes a place-based ecopedagogy that is grounded in care, sensory experience, action, and pluralism and “perhaps puts an end to the nature-versus-culture, art-versus-science dichotomies” (2011, p. 308). Ecological aesthetics is about both the head and the heart, and their interplay in coming to know, understand, create and *be* in the world. As an artist and scientist, I want to know not only *how* teachers do ecological place-based education, but also *why* they do it and *what it is like for them.* From an ecological aesthetic perspective, we can reflect on our interaction with our environment and ask: “How does it work?” and “What can you tell us?” (Kimmerer, 2013, p. 41), reflecting the possibility and beauty of scientific inquiry and artistic expression in one thought. In this study, I looked for the many places where artistry and ecology join together in practice and action to awaken the senses and imagination about teaching and learning and the possibility of what education can become.

Creating the Criticism

The appreciation of the situation as experienced through the connoisseur's lens culminates in the creation of the actual educational criticism: the telling of the artistic, useful, and coherent story the research has to tell. Educational criticism and connoisseurship are grounded by four dimensions that provides structure to this particular form. The four parts are: description, interpretation, evaluation, and thematics. As I worked on turning the data into a coherent whole, I kept in mind Eisner's encouragement to use these dimensions more as useful tool than rules needing strict adherence (1992). I used the four dimensions of educational criticism as a trellis-like framework, providing scholarly integrity and organization to the complex and intricately woven story of educators' and my first year at Desert School.

Description and interpretation. Through description, a common element of qualitative research, I attempted to capture the richness of the situation and present it to the reader in such a way as to help them feel a part of the scene. In Chapter Four, I used thick descriptions (Stake, 1995) of the settings, actions, intentions, and personalities of the participants, including myself through auto-criticism, in order to draw the reader in to our experience. I presented my findings through both literary vignettes (Glesne, 2016; Uhrmacher et al., 2017) as well as magical realism storytelling (Faris, 2004; Zamora & Faris, 1995). The writing was not just full of details and sensory descriptions, but it was also, I believe, artful, engaging, and creatively presented in the artistic form needed to truly represent the findings. As Eisner wrote while explicating the need for alternative forms of educational evaluation and representation in qualitative inquiry, “The selection of a form…not only influences what we say, it also influences what we are likely to experience. Educational inquiry will be more complete and informative as we increase the range of ways we describe, interpret, and evaluate the educational world” (2017, p. 8). I drew on direct quotations from observations and interviews, sketches and notes made during class visits, planning documents, pictures, and various other artifacts collected throughout the study to enrich the descriptions. At times, I incorporated direct quotations into a fictional story, juxtaposing more traditional qualitative writing with arts-based fictional narrative constructions (Barone, 2007; Barone & Eisner, 2012). For the auto-criticism in particular, I relied on excerpts from personal journals, descriptions of collected photos and documents, as well as reflective journaling and comparative interviews with myself and others to create a unique and original cast of characters who help me tell my story (Chang, 2016; Ellis, Adams, & Bochner, 2011).

Interpretation allows us to start making sense of what we see, hear, feel, and think during the research. I drew on scholarly work, existing theories, and my own understanding to make meaning of the educational experiences at Desert School. Interpretation is the process of “accounting for” what we see, hear, and otherwise experience (Eisner, 2017, p. 95). Within educational criticism, the critic draws on their unique knowledge, lens, and conceptual framework – their connoisseurship – to “reconstruct” the situation in order to illuminate the qualities of the experience they deem valuable and interesting (Eisner, 2017, p. 86). For me, this lens was the ecological aesthetic lens described above.

Before beginning my research with participants, I took time to orient myself a bit within the literature of creativity and artistry across many different fields. I read up on artistry within education (Eisner, 2002a, 2002b; Fish, 1997; Rubin, 1983), as well as in general life circumstances (Langer, 2005). I read Kaufman and Gregoire's overview of the practices of creative people (2015), and I explored Wallas' four stages of creativity. I intentionally did not saturate my mind with others' ideas of artistry and creativity. I wanted to be able to approach my research with a general framework *and* an open mind towards what artistry might look like within the practices of ecological place-based educators trying it out for the first time. As for the ecological, I approached the entire research process as an ecologist and environmental scientist (which I am, as well as an educator) studying a newly established ecosystem, perhaps a pollinator garden recently planted or a wetland newly restored. I found I was most interested both in how the educators reacted to and acted within their new environment and educational approach.

In applying an ecological aesthetic lens to my observations and interviews, I looked for places where wonder and delight showed up in the teachers' practice, how they interacted with their environment as individuals and community members, and the ways they embodied grace and flexibility as they navigated their experience. I also kept my eyes open for the blocks and obstacles they encountered, the disruptions to their ecosystem that caused setbacks or limited their ability to thrive, much as an artist or critter might have to do in a dynamic environment.

Within my interpretation I called on my knowledge and familiarity with sustainability science and ecological studies to make sense of what I observed and experienced. I sought to incorporate my connection to the landscape of Desert City through my descriptions of the dunes and wadis. As I analyzed the findings of what I saw and heard, I found myself drawing parallels between ecological concepts and school ecologies. How did ideas and energy cycle and flow? In what ways were interconnected relationships influential to the wellbeing of the system? How did we grow and develop overtime? Linking these ecological concepts to this education situation helped me to see what I may have otherwise overlooked without this lens in place.

Evaluation and thematics. As the educational critic sifts through the data they collect, writing description and providing interpretation, themes emerge from the chaos. Eisner suggests that themes are the main ideas or “essential features” of the criticism (2017, p. 104). Most often, thematics provide a sort of overview of the clearest aspects of the story being told: the repetitive words, the similar phrases or action, the underlying beliefs and intentions. Sometimes themes emerge as outliers, surprises, or unique but inextricable patterns for one or a few participants. Themes help to further make meaning of the situation, as well as to extend the particular to the general in a way that helps others connect the parts of the particular research to a greater whole (Uhrmacher et al., 2017).

Applying my own connoisseurship of ecological aesthetics especially helped me to organize my thoughts and pull out the themes that emerged related to the intentions and artistic judgements and creative attitudes of the teachers. Hopeful visions and imaginative diligence are closely related to the cycle and flow of matter and energy; holistic learning and open-hearted connection echo the idea of interdependent and nested systems; responsive action and deliberate spontaneity connect to ecological concepts of growth and development and change over time.

Additionally, by looking at my research through the lens of ecological aesthetics, I came to recognize myself as the gardener or caretaker of both the learning garden as well as this dissertation, using both knowledge and love to nurture growth and development from the beginning of the growing season through the final days of harvest. Recognizing and honoring this role was especially important in the final days of writing, editing, analyzing, and clarifying the actual educational criticism. Thinking of myself as the gardener helped guide me through these last sections along the research path, reminding me of the passion, love, and curiosity that set me off on this journey in the first place. It also helped me to see that my entire dissertation loosely follows the cycle of a garden from idea to harvest, which was a delightful last-minute realization to make and useful set of themes related to implications and recommendations.

Evaluation is the aspect of educational criticism that requires the critic to make a judgement, to examine the situation in light of the implications it holds for the improvement of education, in this case ecological place-based education in particular and education in general. Eisner explains that in order to make these judgements “requires not only knowledge of the history and philosophy of education, it also benefits from practical experience in the schools” (2002a, p. 232). The critic must be able to not only apply their theoretical knowledge to the situation but also their personal professional knowledge (Connelly & Clandinin, 1991) to determine what is of value. Eisner defends the need for practical experience, especially to guide evaluation of educational situations, because “[s]ome things can be known only by having acted” (2002a, p. 232). In this study, I was curious about how artistry and creativity showed up in the intentions and practices of teachers bringing a new ecological school to life through place-based education. I am not only an educational researcher and doctoral student; I am also an experienced ecological educator and ecoPBE curriculum designer. I have myself worked as an ecological educator as well as trained ecological educators around the world, in many different settings. As Eisner writes, this sort of connoisseurship is a private act that requires one to have a "range of experiences in a mode of expression [for] sophisticated levels of connoisseurship [to] be developed" (2002a, p. 215). My practical experience with this sort of teaching allowed me to first appreciate and describe the nuances and surprises observed in teachers' practices at Desert School so as to showcase that which might go missed by someone less familiar with this educational realm (Eisner, 2002a). I applied this same connoisseurship to the evaluation and public disclosure of the qualities of these appreciations and descriptions. As Eisner explicates, "Now what counts as significant will depend on the theories, models, and values alluded to earlier…it will also depend on the purpose of the critic" (2002a, p. 220). As explained above, the conceptual framework I applied in this research is an amalgamation of ecological, aesthetic and educational theory, of intellectual knowledge, intuitional understanding, and personal experience. My purpose was to explore the experiences of new ecological place-based education, in hopes of understanding how we might get more teachers - all teachers, in fact – to do ecological place-based education, no matter their background. My evaluation, provided in Chapter Five, discussed the judgements and recommendations I felt were significant for the improvement of ecological education, as seen through this framework, for a more sustainable world.

Rationale for Methodology

While educational criticism shares many similarities with other qualitative research methodologies, such as the fieldwork and rich description of ethnography and case study, it places a supreme emphasis on improving education through both evaluation and action (Uhrmacher et al., 2017). Eisner writes, “It is, perhaps, the evaluative aspects of educational criticism that most clearly distinguish the educational critic from that of the social scientist” (2002a, p. 321). Making evaluative judgements about what to share, how to share it, and why certain elements are important to take note of is the work of the critic. The aim of educational criticism is to illuminate new ways of looking at what happens in specific educational situations, seeking value in the findings, and offering interpretations and opportunities for generalization in the real world. Perhaps even more importantly, is the ability of the critic to improve the educational enterprise. As Eisner writes, “But my ultimate aim…is to contribute to the improvement of education. For me the ultimate test of a set of ideas is the degree to which is illuminates and positively influences the educational experience of those who live and work in our schools” (2017, p. 2). This was ultimately the reason I was drawn to educational criticism as my methodology: to make schools a better place to live, work, learn, and be, to improve schooling in order to create a more just, sustainable, and beautiful world. This is a big task, no doubt, and of course this dissertation is only a small drop in a huge bucket. Nonetheless, my research is well suited for educational criticism for several reasons.

First, the focus on educational improvement and seeking “what is of value here” runs parallel to ecological theory and the principles of ecological literacy and place-based education (Orr, 1992; Orr, 2004; Uhrmacher et al., 2017). Nature is the best teacher and provides many lessons for us to learn from with regards to sustainability, compassion, community building, and resilience (Goleman et al., 2012). Nature teaches us to depend on others, to see that our choices have an impact, that there is no such thing as “away,” that creativity and diversity go hand in hand with resilience, and that compassion is just as likely as competition (Ferguson, 2019; Stone & Barlow, 2005; Wessels, 2013). Ecological place-based educators learn to develop and nurture these themes through their work. Currently the research and theories surrounding ecological place-based education focus on the practices of ecologically minded and experienced outdoor education teachers doing ecological and environmental education. In examining traditionally trained educators implementing an ecological curriculum – a new concept for them (Eisner, 2002a; Uhrmacher, et al., 2017), and using auto-criticism to explore my experiences as Director of Education for Sustainability, I applied new ways of seeing and hearing ecological place-based education in action. Educational criticism provides the elements that guided me through the process of appreciation and discernment, “of learning to see and hear” the uniquely educative qualities of an experience or situation using description, interpretation, evaluation, and thematics (Dewey as cited in Uhrmacher et al., 2017, p. 4).

Second, Eisner’s ecology of schooling and its application within educational criticism emphasize the active, holistic, interconnected nature of education and educational improvement. Eisner’s ecology of schooling (1992) considers school reform from an ecological perspective: schools are living systems, complex, robust, and, ideally, adaptive (Cabrera & Cabrera, 2015). As such, we cannot consider just one aspect of schooling if we want school reform to be lasting and effective. We must consider the interrelated parts of the whole: curriculum, pedagogy, school structure, evaluation, and intentions (Eisner, 1992). As the connoisseur, this systems-thinking approach was intuitive to me as well as practical for guiding the development of my research questions and methods. Additionally, Eisner's ecology gave me a robust framework for the interpretation and evaluation of school reform grounded in interdependence and nested systems, echoing another principle of ecological literacy in action. As conservationist Aldo Leopold writes, "All ethics so far evolved rest upon a single premise: that the individual is a member of a community of interdependent parts" (1949, p. 203). In emphasizing the school ecology in theory and practice, educational criticism pairs uniquely with this study on place-based education, a holistic, interdisciplinary educational approach (Gruenewald, 2003; Smith, 2002a).

Third, educational criticism encourages the critic to look for the unexpected (Uhrmacher, et al., 2017), to move beyond simple recognition to perception (Eisner, 2002a). "Let us agree with Dewey (1934)," Eisner writes, "that recognition is perception aborted…[to be a connoisseur] one must have the desire to perceive subtleties…looking is essentially a task one undertakes; it is seeing that is an achievement" (2002a, p. 216). With this directive to not just look but to see, the critic becomes an explorer seeking the unknown, allowing their perception to expand beyond the easily identifiable elements to the more distinct, surprising, and subtle particulars of a given situation. In examining the experiences of traditional educators doing ecoPBE, there is much that is unknown and unexamined, much untried and untested in this field, both in practice and in research (Gruenewald, 2002), and I tried to remain open to the unexpected throughout my research.

During the course of this research, and especially during some of the most tumultuous times, I thought of the story of the stone which Dewey shares in *Art as Experience*. In this story he paints a picture of a stone moving through space, and the transformational nature of the simple acts of "[looking] forward with desire to the final outcome; [of being] interested in the things it meets on its way…and that the final coming to rest is related to all that went before as the culmination of a continuous movement. Then the stone would have an experience, and one with esthetic quality" (Dewey, 1934, p. 41). While theories and complementary scholarly research provided structure and relevance to this study, maintaining a spirit of curiosity, imagination, and wonder allowed me to "remain interested in the things I met along the way," to seeing what ideas and themes surfaced from the experience, no matter my expertise. Indeed, this is one of the roles of the critic, to "[point] out the unexpected or idiosyncratic but noteworthy phenomenon (Uhrmacher et al., 2017, p. 51). I included open ended and emergent questions with this sense of curiosity and possibility in mind (Uhrmacher et al., 2017). Similarly, educational criticism draws out the artistry in research, and the process itself was educative and transformational for me and continues to be even now. Indeed, one aim of educational criticism is to create a product that allows another to consider an idea in a different way than they ever would have otherwise; hopefully this rings true for the participants and the readers of the final criticism as well. These ideas are explored more in Chapter Five.

Finally, educational criticism and connoisseurship calls on the researcher to employ and develop their special passions, knowledge, and interests, drawing on their specializations to "help others see and know what may otherwise go unnoticed"

(Uhrmacher et al., 2017), at best becoming an educator illuminating the world with a different light (Eisner, 2017). I approached this research as an educator, an environmental scientist, and an artist. In educational criticism and connoisseurship, the private and public meet in the creation of the criticism (Eisner, 1976, 2017, 2002a). In one of his earlier explications of this methodology, Eisner writes, "Connoisseurship is private, but criticism is public. Connoisseurs simply need to appreciate what they encounter" (Eisner, 1976, p. 141). Connoisseurship is the private act of appreciation and discernment, of being able to both enjoy and identify the unique and valuable characteristics of a situation through a specific lens (Eisner, 2002a). As I examined the intentions and practices of place-based educators, I applied the ecological aesthetic lens described above to the perception and discernment of ecological and artistic qualities found in ecological place-based education (Dewey, 1934). My knowledge and experience as an environmental scientist gave me a deep well of ecological understanding to draw from, especially noticing and describing that which others might otherwise miss (Uhrmacher et al., 2017). My dedication to developing ecological literacy within schools meant my eyes and ears were keenly attuned to applications of ecological principles and practices, like compassion, community-mindedness, and sustainability. Being able to draw on these very personal passions, kept me focused and aware, deeply dedicated in a way I believe helped me better see and hear within this educational setting. As Burroughs wrote, "Love sharpens the eye, the ear, the touch…what we love to do, that we do well" (Burroughs as cited in McKibben, 2008, p. 146).

With regards to the role of the critic, Eisner writes "Critics, however, must render these qualities [appreciated by the connoisseur] vivid by artful use of critical disclosure.

Effective criticism requires the use of connoisseurship, but connoisseurship does not require the use of criticism” (Eisner, 1976, p. 141). As the educational critic, it was imperative that I not just appreciate the significant and meaningful qualities of ecological place-based education in action by these new teachers from a distance. I also had to actively engage with the situation and publicly share my evaluation. I had to get close. As Eisner writes, “I do not believe improvement of our schools is likely if we distance ourselves from their problems or their achievements. Detachment and distance are no virtues when one wants to improve complex social organizations or so delicate a performance as teaching” (Eisner, 2017, p. 2) By using this methodology, I committed myself to remaining close to the subject and calling on my special passions, knowledge, and interests to make sense of it all. I did not shy away from the subjective side of research but drew on it as a strength. Along with the support of scholarly theory and literature, my voice as a researcher and teacher was allowed to be heard fully within these pages, which I believe is a strength of educational criticism. Over the years, as an educator, artist, and scientist, I have come to believe that to pretend that the researcher (or artist or scientist) is anything but deeply intertwined with their work – from the conception of what they might study to the discussion of the findings – is a false premise. Whether driven by funding, tenure, bias, justice, passion, curiosity, or any combinations of factors, research, art, science, and teaching (to name only a few fields) are inherently linked to the individual who does it, whether we acknowledge it or not. Eisner explains in various writings that part of his reason for developing this methodology was to address the development of qualitative researchers and the limited acceptance of alternative forms of inquiry, evaluation, and representation. He writes, “Doctoral programs socialize students to believe that the most dependable procedure one can use to obtain knowledge is through science and that respectable inquiry in education…is scientific in character. To use other methods, to employ metaphor, analogy, simile, or other poetic devices, is to lack rigor" (2002a, p. 214). I am grateful to have been a part of a doctoral program that encouraged the "methodological pluralism" Eisner built his work upon (2017, p. 2). Educational criticism allowed me to use my particular connoisseurship – my strengths, knowledge, passions, and interests – in a way that was transformational to me as a researcher as well as, hopefully, useful to the field of ecological education. I was able to share what I saw and heard vividly, make evaluative judgements of significance, and present the implications of the findings publicly and artfully as a scientist and an artist, a scholar and a teacher. These implications for ecological PBE and education in general are further evaluated and interpreted in Chapter Five.

Arts-Based Research and Auto-Criticism

As described throughout this study, educational criticism and connoisseurship is "a form of educational inquiry" that is built upon arts-based research and focused on the improvement of the enterprise of education (Eisner, 2002a, p, 212). Eisner developed this alternative form of educational inquiry as a response to what he considered the "deleterious consequences" on schooling, past and present, because of forms of research and evaluation grounded in "science and technology" (Eisner, 1976, p. 136). Eisner, like other pioneers in the field of qualitative research, experienced the available and accepted forms of inquiry and representation as limiting and constricting, "inhospitable to the kind of life that work in the arts might yield" (Eisner, 1976, p. 136). Situating educational criticism within the realm of the arts, Eisner intended to "exploit the various forms of understanding that different knowledge structures can provide" beyond the discursive alone (Eisner, 1976, p. 149). He held up poetry, film, photography, and graphic displays as possible ways to conduct and offer evaluation of education (Eisner, 1976, 1994) and saw benefit in turning our attention towards cultivating spaces and creating opportunities to practice educational criticism and connoisseurship for the improvement of education.

Arts based research, like the arts, "is a process that uses the expressive qualities of form to convey meaning" (Barone & Eisner, 2012). It is in many ways both a process and a product, a way of approaching the research and rendering the findings such that they are artfully, creatively, and imaginatively expressed. The aim of arts-based research, like educational criticism, is to provide other ways of representing knowledge and understanding, with a particular bent towards the aesthetic with regards to the process, product, and eventual public interaction with the piece (Barone & Eisner, 2012; Eisner, 1994). Arts-based research ideally, encourages the reader to "participate in the experience of the author" while also transforming the experience for the author-artist. "The arts, like the sciences, remake the maker and the tools that the maker uses has a profound impact on who we become," write Barone and Eisner in explaining their rationale for the need for arts-based research (2012, p. 5). By giving researchers new tools – paintbrushes, dance steps, theatrical lighting, for example – to share our findings, we may even start to ask different questions and hear different answers. This is imperative in a time when education is so deeply in need of transformation and improvement for all students and teachers, and for the health of the world. Barone and Eisner offer this explanation of the expansive potential of arts-based research:

> Arts-based research is an effort to extend beyond the limiting constraints of discursive communication in order to express meaning that otherwise would be

> ineffable…Arts-based research represents an effort to explore the potentialities of an approach to representation that is rooted in aesthetic considerations and that, when it is at its best, culminates in the creation of something close to a work of art" (2012, p. 1).

Within this expansive and exploratory vision of arts-based research, which educational criticism exemplifies, there is room for experimentation and the emergence of new forms of research within the field. Barone and Eisner write, to my delight as a scientist and artist, that "one of the characteristics that artists and scientists share is that both groups of individuals are troublemakers. The trouble that they make is trouble for themselves. It is trouble found in the unanswered questions and unresolved problems that serve to animate activity within their field" (2012, p. 6).

Uhrmacher et al. (2017) made the best sort of trouble for themselves and "animated activity within their field" of educational criticism by offering auto-criticism as an elaboration or extension of the methodology originally described by Eisner. Auto-criticism uses the analytic frameworks of description, thematics, interpretation, and evaluation that guide educational criticism, yet turns the focus of the researcher inward, focusing on their lived experience as opposed to that of the participants. "Thus," they explain, "one may write about one's own life in the contexts of being a teacher, a principal, a social worker, a nurse, or a business leader, and in doing so…bring new intellectual ideas to life" (Uhrmacher et al., 2017, Kindle Loc. 1861). Auto-criticism is similar in many ways to other forms of auto-qualitative inquiry in which the researcher has to "endure scrutiny for objectivity," looking deeply at their own experience in order to make sense of it for others (Rezac, 2019). Auto-criticism, in drawing on the analytic elements of educational criticism, retains the analytic tools helpful in this scrutiny or "unpacking [of] one's life" (Uhrmacher et al., 2017, Kindle Loc. 1854). Auto-criticism retains an expectation that the final product will present rich descriptions and emergent themes, while also suggesting implications for the improvement of education, as is requisite to educational criticism. In this way auto-criticism is different from autobiography, which eschews these analytic categories (Uhrmacher et al., 2017). Auto-criticism may also be compared to autoethnography, in that it focuses on the writing of the self. Both often rely on artful descriptions and presenting the researcher-author as a main character for example. A main difference between the two is their focus on context: autoethnography, like ethnography, focuses on how culture influences the experience of the researcher-author whereas auto-criticism, like educational criticism, focuses on the experiences of the researcher-author in a specific setting. As of this writing, I am aware of one dissertation conducted and published using auto-criticism (Rezac, 2019). Rezac explains that within auto-criticism "[i]t is not a critique of the cultural experience but rather the experience as its own entity with culture possibly informing" (2019, p. 39). Rezac further explains, "While the individual voice is the framework through which the criticism will take place, it is without cultural weight and instead a depth of connoisseurship on the experience at hand-not just from a lived experience standpoint, but from a critical lens of both the lived experience and the setting" (2019, p. 43). In many ways, auto-criticism "mirrors" the personalized, reflexive, and yet categorical analytic approach of autoethnography but focuses on using personal connoisseurship to critique the experience of the researcher in a particular setting. Auto-criticism is very much in its beginning, and there is much to be explored within this new approach to educational evaluation.

Rezac’s dissertation, as well as the insight of other researchers currently in the exploratory phases of auto-criticism research, provides a robust and imaginative foundation on which to grow this emerging methodology. She writes, “Auto-criticism develops the ability to recognize ‘nuanced meanings’ (Uhrmacher et al., 2017, p. 12) of the experience in which you are a connoisseur of” (Rezac, 2019, p. 39). In her dissertation, Rezac closely examined both her experience as a doctoral student and the methodology of auto-criticism, guided by the following research questions (2019, p. 25):

1. How do life events of a woman in her 30’s shape her doctoral student experience?
2. How does an auto-criticism uniquely describe and evaluate an experience, in this case a student’s path in navigating their doctoral experience, and what does this contribute to our understanding of that experience?
3. How can an arts-based representation contribute to our understanding of the criticism and auto-criticism as a method?

Through these questions she both focused her research on herself and her experience, while also aiming to explore auto-criticism as an emerging method and arts-based approach. She used her personal journals, collected over years of her doctoral experience, as a main source of data. She created a series of questions linked to each of her research questions to help her more fully and systematically explore her journal entries. She also used “an intuitive painting process” as both an analytic process to help her deeply examine her experience from a new perspective as well as an alternative form of representation to depict her findings (Eisner, 1994; Rezac, 2019, p. 55). Her ultimate creation resulted in a sort of mixed media dissertation that incorporated photographs of her paintings, materials, and studio alongside written explanations and interpretations. As that same time, Rezac admittedly did not provide an overabundance of interpretation, as is sometimes expected within educational criticism in general. As she explains, “A new method benefits from open dialogue to develop understanding; however, this arts-based interpretation leans away from putting words around the process and its outcome inviting free interpretation. I've aimed for a balance of providing details of my experience employing auto-criticism as an emerging method, while leaving as much interpretation of the arts-based approach to the reader as possible" (2019, p. 112).

Like Rezac, I chose to incorporate auto-criticism into my dissertation because I was interested in deeply examining my personal experience. I saw the opening created by Uhrmacher et al. (2017) in their description of auto-criticism as an exciting opportunity to look more closely at my own experience as a skilled ecological educator starting an entirely new ecological school with traditionally trained teachers. In particular, I was thinking of Sobel's recommendation to get an ecological educator in every school to support this sort of education, and I wondered how analyzing my experience in this type of role might "bring new intellectual ideals to life" for ecological place-based education (Uhrmacher et al., 2017, Kindle Loc. 1860). Additionally, I believe there is value in examining the personal experience through an analytic lens as a means of contributing to the *larger story* of ecological education in action. In the traditional educational criticism, we tend to focus on the other: teachers, educators, students, or parents, which is an important part of the story but not all of it. Demarest writes mainly of the educators she studies, even though she has extensive and valuable experience in place-based education herself (2015). Similarly, Anderson (2017) and Kensler and Uline (2017) tell the stories of the *others*, teachers and administrators included, working to create and implement place-based education and "green schooling" practices. By focusing on my own experience through auto-criticism, by making that most familiar strange, I hoped to honor and illuminate complexities that might otherwise remain invisible and provide an opening for empathetic consideration of the intricacies of bringing ecological education to life from a perspective beyond that of the other.

Distinct from Rezac, I did not intentionally set off on this journey intending to examine auto-criticism as a methodology, although this emerged throughout the research as an important finding that needed to be described and shared. Additionally, I ended up using a very arts-based approach to describe and analyze my own auto-criticism experience. This was juxtaposed against a more traditionally categorized and presented education criticisms of the teachers' experience, which was how I initially intended to present the findings of my own study. However, the circumstances of my experience – the specific situational context of the researcher experience – posed barriers and obstacles that I found I was only able to overcome through the narrative structure of magical realism, a decidedly arts-based approach to analysis and representation. I was encouraged to incorporate an additional research question in order to more fully examine the import of this arts-based approach within the emerging methodology of auto-criticism. Thankfully, I was able to rely on the path cleared by Rezac (2019) and Uhrmacher et al., (2017), as well as the graceful and informative guidance of my research advisor, Dr. Christy McConnell, who has also been experimenting with auto-criticism, to navigate this unexpected and exciting trail.

Research Questions and Study Design

In the following section I examine data collection and analysis as they relate to each of the research questions. For reference the research questions are stated here:

Q1 What are the intentions and expectations of educators, including the researcher as participant, about their roles in a new ecological, place-based school?

Q2 How are these intentions and expectations realized, or not, within the school ecology?

Q3 What aesthetic judgements and creative attitudes do teachers and the researcher express as they adapt to a new school and ecological, place-based curriculum?

Q4 What is the import of using magical realism within educational criticism and connoisseurship?

Q5 What are the implications of the findings for ecological, place-based schooling in particular and education in general?

Q1 What are the intentions and expectations of educators, including the researcher as participant, about their roles in a new ecological, place-based school?

For the first question data were collected mainly through direct interviews with each participant. As has been noted by other educational critics (Eisner, 1988; Moroye, 2007), teachers' intentions are not always explicitly expressed or named, and therefore are difficult to evaluate. Asking them to do so through interviews brought the intentional aspect of the school ecology into focus and allowed me to evaluate how these intentions and expectations were realized or not within each teacher's practice (Uhrmacher et al., 2017). For the initial interview, I asked all of the participants the same set of questions in a semi-structured interview format, collecting their answers in handwritten notes as well as through a digital recording. For the auto-criticism, I answered this same set of questions in one setting, typing my answers on a word document. The initial interview questions provided the preliminary data that guide the rest of the study and helped me focus in on the teachers' experience, intentions, and expectations surrounding their role and the creation of a new ecological school. I provided teachers with background into my research questions and interests regarding the artistry and aesthetic nature of ecological place-based education. While the actual questions did not ask them to reflect directly on their own artistry or creativity, their answers did allow me to start to identify some of their creative attitudes and artistic practices from the first interview. Follow up interviews provided opportunities to ask clarifying questions about observations of their practice or to gain deeper understanding of certain aspects of their stated and unstated intentions and experiences.

> Q2 How are these intentions and expectations realized, or not, within the school ecology?

Following the interviews, I collected data through observations and artifact collection and analysis (Uhrmacher et al., 2017). Guided by Eisner's ecology (Eisner, 1992), I observed not only the teachers' intentions from the pedagogical and curricular dimensions within the classroom, but also how their intentions and expectations came into play (or not) within their lesson planning, evaluation, and use of the school space and timetable. I also conducted follow up interviews, both informal and more structured as questions arose during the initial and consequent interviews alongside my observation notes. Some of these questions were the same for all participants, whereas some were specific to one teacher's experience. This is discussed more below in "Data Collection."

In order to better understand how their intentions and expectations played out in practice, I collected different artifacts, from project planning notes and weekly lesson plans, to emails related to specific lesson ideas and intentions to the follow up pictures of student project books. With consent, I also took pictures of the teachers' in action, made sketches of teachers' rooms, and collected lists things they used in a lesson. When critiques and reviews of systems and teaching and learning were done on a school-wide level, I asked teacher participants if they were willing to allow me to use their feedback and input as part of the research. They all always agreed, and I was therefore able to capture unique feedback for all participants related to very specific school structures and curriculum. I was surprised at how often participants would approach me after an observation or critique session to say they hoped their answers were helpful to the research. This showed me both an awareness of my dual role as administrator/colleague and researcher, as well as their genuine desire to support my research.

Because our schedules turned out to be so hectic, I relied quite a bit on digital artifacts, mainly in the form of digital pictures, to help me recall moments and details in quieter moments. This is a practice I often use in my own life, making pictures of fleeting moments, interesting lighting, obscure objects, and situations that I find funny, surprising, or ironic. I use these images to inspire and inform my writing and storytelling, and I found this practice both invigorating and useful in the fast-paced environment of a first-year school. Unsolicited, participants also sent me images and videos of things they were doing, researching, or that their students created which the teachers thought I might find interesting or useful based on our discussions, daily interactions, and interview questions. This turned out to be a surprisingly fun and mutually beneficial development of our connections as professional colleagues and research participants.

For the auto-criticism, I relied on my copious notes and journal entries created during this time. I also collected many artifacts such as project planning notes, brochures and flyers, PowerPoint presentations, observation sheets, and teacher artwork. I also collected digital artifacts which I used to help me recall certain instances or fleeting moments that would have otherwise been lost in the rush of the day. These were all incorporated into the description, interpretation, and evaluation of my experience in various ways.

Interestingly, I found that the process of writing the descriptions and interpretations in particular also unearthed additional useful memories or shed unexpected light on emerging themes. As I came to better understand autoethnography as a methodology, in an attempt to better conceptualize auto-criticism, I realized that in fact reflective writing practices and “self-inventory” are often used as a means of “collecting personal memory data” within qualitative methods such as autoethnography (Chang, 2016, p. 71). For example, at one point I created an autobiographical timeline for myself as an ecological educator, which reminded me of the extensive knowledge I have in the field at a time when I needed an emotional boost. Additionally, this practice brought forth the idea of ecological education as a journey through time and place, which may likely (and unconsciously) have influenced my idea to write my auto-criticism as a hero’s journey across an unfamiliar landscape.

> Q3 What aesthetic judgements and creative attitudes do teachers and the researcher express as they adapt to a new school and ecological, place-based curriculum?

Through the lens of ecological aesthetics, I examined the ways that artistry and creativity were present or absent in teachers’ practices as they brought the school to life over the course of the first year. Classroom observations, lesson planning discussions, teacher reflections informed my description and interpretation of educational artistry in ecological place-based education (Eisner, 2002a). At times, interview responses also provided insight into artistic attitudes and judgements made by the teacher that were not observed directly.

I initially planned to invite the teachers to engage in the creation of a more free flow, interpretive piece, and after several weeks of observing each participant I gave the teachers option to create a portrait of themselves as an ecological place-based educator, as well as to collect and share some artifacts of their choosing. They all responded with enthusiasm and promises to complete the offering. In the end, the continuous changes to the daily schedules, as well as a general shortage of time impeded all of them from completing the task. These and related obstacles actually emerged as significant themes in the study, and they will be described and explicated more rigorously in Chapters Four and Five.

Q4 What is the import of using magical realism within educational criticism and connoisseurship?

This question was added during the dissertation analysis and writing phase as magical realism emerged as an important part of both my process of analyzing the findings as well as the final product. No new data were collected, but the process of employing magical realism to guide the creation of the auto-criticism and elements of the educational criticism proved to be transformative for both me as a researcher and the final product. Adding this question provided a space in which I could evaluate the significance of this rhetorical strategy within my chosen methodology, to add to the literature and expand our understanding of the potential of auto/educational criticism. It also provided me with the impetus to really dive more deeply into the history and theory of magical realism, which further shaped my own approach to description, interpretation, and evaluation in an iterative and informative way.

Q5 What are the implications of the findings for ecological, place-based schooling in particular and education in general?

This question highlighted the expression of the evaluative nature of educational criticism, asking what is of value here for the improvement of education (Eisner, 2002a). I analyzed the data collected through the first three questions for patterns and themes relevant to the research problem using existing theory and concepts of artistry and ecological place-based education combined with my own interpretations of data. I relied on my personal knowledge of ecological systems and concepts, as well as a variety of scholarly theoretical and conceptual frameworks of creativity and artistry to distill the many initial themes presented by the data into the larger lessons offered by the research as seen through my ecological aesthetic connoisseurship (Eisner, 2002a). With the addition of Research Question Four, I was also able to reflect on and evaluate the significance of magical realism within educational criticism, which provided a unique opportunity to analyze my experience as a researcher and critic from a different perspective and share my findings publicly.

Methods

Choosing the Site

I purposefully chose to use the school I worked at as the site for this study. The school is an international school dedicated to addressing the English National Curriculum at the primary and secondary levels. The school promised to deliver a unique international school experience with a curriculum grounded in ecological literacy, sustainability, and environmental justice. Besides myself as a director and teacher-educator, neither the teachers nor any of the Senior Leadership were trained in sustainability education or ecological literacy, and yet all of us were responsible for creating and implementing an ecological place-based curriculum. This opportunity to flip the current scholarly work on its head and examine ecological education from this unique perspective was both exciting and challenging to me. David Orr's statement that "All education is environmental education" is often quoted by ecological educators as sort of encouraging mantra or defensive rationale for doing environmental and ecological education. I have long wondered what schools would look like if everyone *had* to teach from an ecological perspective, just like everyone has to teach reading and multiplication. By looking at both the teachers' experience through educational criticism alongside my own through auto-criticism, I was not comparing the novice to the expert, but seeking to refine my own connoisseurship and build a more robust anticipatory framework for ecological place-based education in the larger context of education (Eisner, 2002a). I believe the juxtaposition of different roles throughout the school, from classroom teacher to senior leadership as presented in this research, may provide greater insight into the experience of putting ecological education into action than if I were to only consider only one perspective. In practice, schools are ecological systems (Eisner, 1992), and the stories of all the characters – teachers, administrators, support staff, students – and their relationships and experiences intertwine. I was simply curious to see what of value emerged from the field notes of this educational adventure and inspired to tell the tales.

For the duration of the study Desert School was in its inaugural year. The school was open to students from early years (2.5 years old) to grade six, or end of primary (approximately 11 years old). The school population fluctuated around 350 students in the first year, with a year-round trickle in and out as is typical of international schools. The academic staff consisted of about 25 full-time teachers, all originally from the United Kingdom; approximately 25 Learning Support Assistants (LSAs) from various locations including the UK, the Philippines, South Africa, Lithuania, Vietnam, and Kenya; an educational support team including an educational psychologist, a school counsellor, and specialized behavioral consultants, all from the UK; and 5 Senior Leaders, including the principal, all from the UK with the exception of me, the only American on the academic team.

The school was located on the outskirts of a large urban city in the Middle East North Africa (MENA) region. The school was situated in an area that, at the time of this study, was still was being developed. Surrounding the school on all sides were either vacant sandlots, active construction sites, or newly built single-family villas and midrise apartment buildings. Outside the school grounds, the landscaping and greenery consisted of only a median of newly planted date palm trees running down the middle of the road; there was no grass or otherwise landscaped green areas or parks. There were no established sidewalks connecting this area to the more established community several miles down the road. The student population was varied, with 45 nationalities represented in the student body. Most students were in some way associated with the United Kingdom, be it through work, ancestry, or passport, although many had grown up in the city where the school was located their whole life. The school was defined as a “premium school” by local standards, and parents paid a substantial private school fee commensurate with the local expectation. It should be noted that, in this particular city, premium status is only partly related to the quality of education; it is more directly related to the school fees structure and influenced by the local education authority rating, which is based on a specific set of criteria. As a new school, Desert School would not receive an official rating for several more years.

Inside the gated and guarded school compound (common to international, private schools abroad) the school campus stretched for more than 30,000 square meters. There was a professional sized soccer pitch, three large (45 feet diameter) and three small (15 foot diameter) climate controlled ecodomes housing living trees, edible plants, and medicinal herbs. Additionally, there was a school learning garden with raised beds, trellises, a shady palapa, outdoor classroom, and various compost systems. This learning garden was the inspiration for parts of the educational criticism. The landscaping around the school consisted of a mixture of grassy lawns punctuated by medicinal and flowering trees, miniature edible forests, and shaded playground areas. Over the course of my time at Desert School, I was responsible for designing and overseeing the development of all of the green spaces, including landscaping. As much as possible, I chose to use permaculture and sustainable agriculture principles to guide design and implementation, though often certain decisions – such as the need for grassy lawns – was handed down by higher administration. This experience of creating these spaces will be described in greater detail in Chapter Four. In one area a fenced in pen housed a tortoise and two hares which were donated to the school. Inside the school, only the first of three floors was fully operational at the time of the study. The second floor was partially open for use, with many classrooms locked or under construction. The third floor was entirely closed off to students and most faculty at the time of the study.

Choosing Participants

I had initially hoped to find three to six participants to work with during this research, including myself as a participant. After gaining site permission from the Board and Principal, I sent out an initial email asking for volunteers to participate in the study.

The email was sent to our entire pool of academic staff, including classroom teachers, educational psychologists and behavioral specialists, Arabic and Islamic Studies, and specialists (Music, Physical Education, Art, Permaculture, and Educational Technology), and Learning Support Assistants (LSAs; similar to classroom aides). While I was most interested in focusing on “classroom teachers” I was inspired by the work of Hodgkinson (2011) and the breadth of characters he worked with in his study of a first-year sustainable education charter school, so I was open to all types of participants who might be interested in participating. I used purposeful selection through volunteer sampling (Jupp, 2006) from among the teachers and other staff, as I was interested in working with those people who really wanted to be a part of the project of their own volition.

After initial interest from six classroom teachers and one member of SLT, three participants volunteered to join the study. Because of the relational aspect of conducting a study using educational criticism, I wanted to find participants who were excited to be a part of this and willing to welcome a fellow educator into their classroom. While seeking volunteers is not uncommon (Creswell, 2014), my intention behind this decision was twofold. First, I hoped to create a collective space that would encourage genuine “dialogue and collaboration between artists and scholars” (Lawrence-Lightfoot & Davis, 1997, p. 5) for the purpose of collecting data that allows for thick description along with meaningful interpretation and evaluation. Secondly, I wanted to ensure, to the best of my ability, that no one felt forced into participation because of my role as a Senior Leader. For this reason, especially, I was very patient and almost passive in waiting for participants to confirm their participation, sending gentle reminders only occasionally, even though my actual personality tends towards action and lively interaction. In the end this may have delayed my research start timeline by several weeks, but it also meant that the participants who joined the study were, by all appearances, genuinely interested in taking part.

Teacher participants. Ms. Liz is from England. She was an Early Year's teacher in her third year of teaching. At the time of the study she was in her first year living in the city. Mr. Kit was a Primary Years teacher from England. At the time of the study he was in his first year living in the city and his fifth year of teaching. Ms. Tanya was also a Primary Years teacher. Ms. Tanya is also originally from England, although her parents have lived in the region for some time, and she was familiar with the city before deciding to move here. She worked in Desert City for about five years total, and she was in her seventh year of teaching during the study. She was also a member of the Middle Leadership, supporting teaching and learning in Key Stage 1 (Years 1 and 2, plus her own Year 3) as a Phase Leader. None of them had any specialized training or education in ecological education, sustainability, or ecological literacy; however, all of them were motivated to join the school in part because of the focus on the environment, as will be described in Chapter Four.

In designing this study, I recognized the potential ethical dilemma created by the power imbalance that may be felt by participants, especially classroom teachers. As a member of the Senior Leadership I was responsible for ongoing observations, evaluations, and preparation of feedback on staff performance. Some teachers may have been dissuaded, or similarly encouraged, to participate because of the dynamic of this relationship. While this was a worst-case scenario, it is important to acknowledge upfront as a possible limitation. In all of my emails and communications with teachers eliciting volunteers, I was clear that participation was entirely voluntary and in no way related to their performance review. I let them know that they could opt out of the research at any time without consequences. I did my best to communicate to them that through this research, my intent was not to evaluate their work as good or bad, effective or ineffective, but that I was looking for what was of value in how they experienced their roles as new ecological place-based educators. I also let them know I was similarly evaluating my own work, applying the same questions and reflective practices to my role as a teacher-leader in an effort to reflect and improve upon my practice while contributing to the improvement of education in general. I regularly modeled and reflected honestly on my professional work from our first days of working together, sharing ideas, admitting and correcting mistakes, and telling them when they had taught me something new. Additionally, I openly shared my passion for the outdoors, nature, and science in an authentically nerdy way, which the teachers often respectfully teased me about. In the end, I believe these demonstrations of professional critique, reflection, and passion on my part helped the teachers understand the honesty and curiosity behind my request as an effort towards constructive and empowering educational improvement, for a more sustainable world.

Auto-Criticism. Along with the three teacher participants, I conducted an auto-criticism, or a study of my own experiences in the context of the situation (Rezac, 2019; Uhrmacher et al., 2017). I refer to my role as a “participant-researcher” or researcher as participant. This term aims to define the role of the researcher in an auto-criticism as different than what has already been described in other forms of qualitative research, such as action researcher (Glesne, 2016) and participant observer (Creswell, 2014). Action research is typically described as collaborative by nature and addressing a specific problem within a unique social system. Participatory action research, in particular, is often grounded in critical theory and "committed to social transformation through involvement of marginalized or disenfranchised groups (Glesne, 2016, p. 25). In both cases, the researcher acts as the "facilitator who keeps the research cycles moving" (Glesne, 2016, p. 25) within the group setting or social system being examined. In my study, I played both the role of researcher when working with other teachers, and participant, when collecting data on my own experiences in a particular setting. I was neither collaborating with a group or nor facilitating a certain sort of problem solving related to the research, nor was I simply a participant observer, building relationships, conducting careful observation, and meticulously recording and communicating findings (Creswell, 2014), while trying to fit into the "local behavioral norms" (Glesne, 2016, p. 69). Acting as a participant-researcher within this study, I drew on methods used within autoethnography, such as literary writing, journaling, and self-reflection to examine my practices as an ecological, place-based educator in this new school (Chang, 2016; Ellis, 2004; Glesne, 2016) while treating myself as a subject or participant-researcher. As a participant-researcher I used both my personal journals and my daily diary as a space to journal reflectively. Sometimes the entries were very short, consisting only of a few bulleted points made in a quiet but brief moment. Other times they were lengthy entries reflecting on an experience at Desert School, my emotional state, or descriptions of the local landscape. Additionally, I was guided by the work of Chang (2016) in *Autoethnography as Method,* in which she details many useful practices of conducting a successful autoethnography. The writing practices, such as creating an autobiographical timeline and choosing and describing cultural artifacts, were useful to help me move between the "field texts" collected throughout my time at Desert School and my personal memories, as well as to flush out details and ideas otherwise tucked away. I believe that these autoethnographic "chronicling" tools (Chang, 2016) were incredibly useful in breaking down the large task of self-observation and reflection that is necessary for auto-criticism. I believe they provide much needed structure to the data collection and analysis phase, especially for those of us knew to auto-qualitative methods. I would likely lean more heavily on these in future auto-criticism research. One important change I made in carrying out these techniques, was to keep my focus on the experience and situational setting versus getting deeply mired in the cultural aspects of analysis, although these certainly did inform my writing even unconsciously (Rezac, 2019).

Others of similarity. Auto-criticism is an emerging methodology, and as I experimented with it myself, I found I wanted to find other ways to engage in self-observation. After my position was cancelled at Desert School, I found that I was craving an opportunity to interact with peers to help me better understand my experience and the emerging themes from another angle. I wanted to step back from my own experience for a moment, to gain perspective by looking to others in similar roles. Chang suggests an autoethnographic method of collecting self-observational and self-reflective data that uses an "other of similarity" and "other of difference" comparative analysis approach (2016, p. 101). With the teachers in some ways situated in the role of "other of difference," I decided to try to find one or two "others of similarity" to support reflection and discovery of my own experiences. Using my connections within the sustainability education community of the city, I was able to find two participants who were eager to support me. I was surprised at how enthusiastically both individuals responded to my request. They each participated in one semi-structured interview (Appendix C), and I was able to observe one participant, Ms. Billy, at her school site for one day. For the interviews, I collected both digital recordings as well as handwritten notes on their responses. For my observation of Ms. Billy, I was also able to collect descriptions of the setting in which she taught, interactions with colleagues and students, and her physical movements. Both of these educators hold similar roles to my own within their respective schools, and they both were teaching at private international schools in the same city as me. Unintentionally, both of these participants were, like me, from North America, female, and experienced classroom teachers before turning to sustainability leadership roles. While I did not end up including their specific experiences much in this study, interacting with them and reflecting on our similar experiences both in person and through analytic processes helped me to more objectively and holistically examine my own experience as well as to refine the themes emerging from the data. The more significant findings generated from these comparative interactions are included subtly within the auto-criticism in the character of the woman in the desert.

Consent and Confidentiality

The participation of all educators in the study was entirely confidential and used informed consent for all participants (Creswell, 2014). I did not disclose to any other teachers or administrators who volunteered to take part in the study. I took care when scheduling and conducting classroom observations so as not to draw undue attention to a particular participant. I blocked out prescheduled observation time on my calendar using a simple X, Y, Z code and never referring to my research or data, even when I was conducting observations for the study, although the participants knew why I was in their classroom. Thankfully, in my role at the school I was in classrooms, on fieldtrips, or in the learning gardens, observing and working with teachers across the school, so it was not out of the ordinary for me to be sitting in on a class or observing a lesson. Despite thoughtful planning to "lead away from particular individuals and toward the discussion of general concepts" in order to maintain confidentiality agreements with teachers or other participants (Glesne, 2016, p. 162), no one actually asked about my behaviors or research beyond the curious check in to see "how it was going."

Additionally, in writing the criticism, I have taken great care with not only the description of the teachers but also the description of the school and locale. This is of particular importance when working within the international circuit as it is quite communicative and interconnected, and particular schools and individual educators are often easy to identify if one is not careful with descriptions. For example, in certain places there may only be one school with a particular curriculum or a "focus on sustainability," and particular details can give away the location or identity of a teacher. While this is not unique to research in general, I have been as diligent as possible in maintaining confidentiality in this context, especially in light of the fact that the study focuses on *place* as a defining factor of curriculum and pedagogy. After my position was "restructured" out, it became more difficult for me to keep in constant contact with the Desert School participants. Although I have sent them copies of vignettes and descriptions for member checking (Glesne, 2016; Stake, 1995), I have not heard back beyond "I'll take a look and get back to you" replies. Due to the complexity added by the cancelling of my position, I have only reached out to participants when absolutely necessary, letting them take the lead in responding if they choose.

Data Collection and Analysis

Educational criticism employs four elements that guide research design as well as data collection and analysis: description, interpretation, evaluation, and thematics. Like many modes of qualitative inquiry, educational criticism uses thick description to paint a picture of the situation for the reader. As a connoisseur, interpretation and evaluation are immediately put into play as one decides what not to attend to as much as what to examine more closely through data collection (Eisner, 2002a; Uhrmacher, et al., 2017). Most of my data were collected as a combination of fieldwork (observations and sketching), interviews, and artifact collection of materials produced or used by the participant. Reflective memos and annotations also provided useful data of more personal and contemplative kind (Chang, 2016; Ellis, 2004; Saldaña, 2016; Uhrmacher et al., 2017). Thematics emerged through the on-going analysis of data, sometimes through coding and sometimes through other methods of organization such as annotation and memo writing (Saldaña, 2016; Uhrmacher et al., 2017). Sometimes I even relied on physical manipulation of the data, writing out emerging themes on pieces of paper and intuitively organizing and reorganizing them into different groups until themes fell away or emerged more fully. Annotation is an analytic tool often used in qualitative research to support the researcher in reflecting on their data in more intuitive, thoughtful, and in the moment ways. Annotations can be related to almost any aspect of the research process, from methodology to analysis, or simply personal or emotional. Uhrmacher et al. present annotation as an “alternative to coding” that draws on the use of annotation in arts criticism (2017). They suggest that educational critics might use annotation to note the “rhythm, dialogue, interactions, various kinds of curriculum” observed in educational situations (2017, Kindle Loc. 1368). Reading and re-reading the nots and descriptions written after observations, I made annotations linking certain actions to other moments, highlighting a teacher’s repetitive use of a word or phrase, or linking it to an idea that popped into my head while reading. Sometimes in the reading a particular emotion was evoked, and I made note of this. Similarly, Saldaña presents the ideas of using analytic memos as a place to “‘dump your brain’ about the participants, phenomenon, or process under investigation by thinking and thus writing and thus thinking even more about them” (2016, p. 44). I used coding in a form that echoed “the transitional process between data collection and more extensive data analysis” (Saldaña, 2016, p. 5), initially relying heavily on process coding to draw out the action of the observations and in vivo coding to keep the focus on the participant before applying my own lenses and frameworks while also taking a more intuitive approach to coding and theming.

My first two research questions (*What are the intentions and expectations of educators, including the researcher as participant, about their roles in a new ecological, place-based school? How are these intentions and expectations realized, or not, within the school ecology?)* were rather emergent in nature. They “allowed the situation to speak for itself” (Eisner, 2017, p. 176). In other words, I was simply keeping my eyes open to what might show up. The third question (*What aesthetic judgements and creative attitudes do teachers and the researcher express as they adapt to a new school and ecological, place-based curriculum?)* was intentionally more prefigured; I knew I wanted to look at artistry and creativity, so I looked for it specifically (Eisner, 2017). I leaned into my understanding of creativity theory to help me analyze the collected interview notes, observations, artifacts, and descriptions with the third question in mind. At the same time, I did my best to remain open to what might emerge or what remained unimagined even when observing for artistry and creativity (Oliver, 2010). I didn't limit myself to a specific set of characteristics of artistry or creativity or one rigid definition of the same. By looking with a focus *and* an open mind, I hoped that I might truly see, or perceive, more than simply looking for what I expect to be there (Dewey, 1934).

Interviews. For the teachers at Desert School I conducted one formal initial semi-structured interviews, as well as one formal semi-structured final interview for two of the three participants. One surprising element that came about from the interviews was the deep-seated passion for ecological education *even if they doubted their own knowledge and skills*. When I asked teachers to talk about why they had chosen to apply and then work at Desert School, I wasn't sure what to expect. Given the lack of ecological mindedness often apparent in their teaching or their own actions, I was quite surprised when they all said that it was the mission of sustainability and the environmental focus that inspired them to apply. As will be discussed further in Chapter Five, they all saw this new school as an opportunity to create something really remarkable at a time when the world is changing so rapidly and dramatically. These moments in the interview left me revitalized and excited, feeling as if I had allies out there whom I didn't know existed until we took the time to talk about our shared intentions.

During the initial interviews it also became apparent that the teachers were all incredibly overwhelmed and verging on burnout with half the year left. This led me to rethink my follow up interview plan, which initially I had informed them would be another one on one visit. While they all said they were looking forward to it, when we finally started to try to schedule them, it proved harder than expected. The teacher simply didn't have enough time in their days. I describe my adjustments to their needs below, in the section titled "Follow up Interviews."

For my auto-criticism, I used the same list of semi-structured interview questions (Appendix A) and wrote my answers on the computer in a conversational form. This process was incredibly exciting for me, because it forced me to take time out of my own busy schedule to reflect on myself as a practitioner. How did I get here? Why do I do what I do? How do I see myself as an ecological educator? In the midst of the first year of starting a new school, it was so easy to always be focused on the next task at hand, the next item on the list to check off. This opportunity to slow down and acknowledge my own intentions, expectations, and experiences helped me to remember my own values and the importance of allowing ourselves to "teach who we are," as Parker Palmer writes (2017).

My interviews with "others of significance" were one-off events. I used a semi-structured format, modifying the original list of interview questions to make sense in light of their roles (Appendix C). Ms. Mara was no longer living in Desert City at the time of the interview, as she started a new job in fall of 2019. We conducted our interview and follow up via video Skype, WhatsApp, email, and Instagram. The interview with Ms. Mara took about ninety minutes accommodating for a few technical issues as well as allowing a chance to catch up and hear what her new school experience was like. Like the teachers, Ms. Mara seemed incredibly excited to have someone take interest in *her* experience, intentions, and expectations as an ecological educator, and her energy remained high even with a few technological snafus and the distinct time zone difference (she was just waking up, as I was getting ready for bed!).

I was able to visit Ms. Billy at her school and observe her for a day, as well as conduct a sort of “walking interview” over the course of the day. Her day was so hectic she said right away that there would be no time for a sit-down interview. I suggested that I could just pepper her with questions in the in between and set up, and she was more than happy to do so. In this way I got to see Ms. Billy in action, watching with immediate effect how she could explain her intentions, then put them into play only minutes later. It was also particularly helpful to have the opportunity to watch her interact with a variety of people over the course of the day: kindergartners, high school juniors, AP teachers, vice principals, secretaries, classroom teachers, and parents. As will be discussed in Chapters Four and Five, these opportunities to talk and reflect with peers were some of the brightest moments in my post-redundancy experience, and they breathed life and focus back into my research.

Follow up interviews. I had intended to conduct more “formal” follow up interviews, but the teachers’ time was already stretched too thin due to school requirements and pressures, that I felt I would stress our relationship by asking for even more time. Instead, I found pockets of time, usually five to ten minutes at a go, in which I asked relevant follow up questions. For example, Ms. Liz had discussed Delilah Bear – a stuffed animal she created an interactive sharing game with – during her interview. One day, I popped into her room, and, seeing Delilah Bear out, I asked her in a quieter moment what Delilah had been up to lately. In this way I heard more about how she had been using Delilah to help students explore their homes, the city, and the school grounds.

Another time, I was able to go on a field trip with Ms. Tanya, and during the bus ride I was able to ask her some of the follow up questions without added pressure on her time. The surprising aspect of this format for follow up interviews was that the teachers seemed to enjoy the in the moment catch up – a chance to talk about themselves as professionals during the school day – as much as I enjoyed listening. I also perceived a bit more authenticity and relaxation from them in their answers, perhaps because we were not sitting face to face, but walking down the hall, setting up a room, or riding a bus, and they were more in their comfort zone.

I conducted final interviews with two of the three teachers. Ms. Tanya and Ms. Liz were both able to find the time to sit down in person one last time. I was able to ask some follow up questions that had arisen during the data analysis phase, but after my position has been cancelled. I also was able to ask some questions about their experience this year versus last year with regards to ecological place-based education. Interestingly, because there were so many personnel changes from the first year to the second year, I felt that some of their responses were actually reflections on a very different situation to the one described in this dissertation. I decided to only include some of their responses that were more reflexive and built on their personal experience versus their judgement of the leadership or institution, past and present. I invited Mr. Kit to participate, and he expressed enthusiasm for doing so. I sent him the final questions specific to him for review. However, he was unable to make time to conduct the final interview before I had to move on with my research. The final interview questions can be found in Appendix B.

Observations. Observations at Desert School took place over the course of between six and eight weeks, depending on the participant. Additionally, my reflective memos stretched throughout the entirety of the school year. While I worked with each participant to set observation schedules that worked for both of our schedules, it proved difficult to meet these with any regularly because of constant changes to the whole school schedule. While this was frustrating to all of us, I was particularly stumped by how to work around the frequency with which I would show up for an observation, and the class was not there, or the teacher was no longer teaching that class for one reason or another. The compromise that I worked was this: I asked the teachers if they were okay if I took notes on our planning sessions and other opportunities working together as part of my research. I also scheduled six to ten sessions with each teacher and observed what happened no matter what – even though once this meant I observed for twenty minutes while the participating teacher was absent from the room. Additionally, after speaking with my advisor and being encouraged to just make it happen, even if for a few minutes at a time, I became more proactive at “popping in,” as the English say, and creating short vignettes from impromptu observations. Several times – and unprompted - the teachers provided me with videos of themselves teaching, made by their learning support assistants, that felt like little research gifts.

During the observations, I usually sat off to the side, or towards the back of the room, where I would normally sit during a more formal lesson observation. Often, once the teacher set the students to work, I would walk around to both see what the teacher did as well as how the students responded. In each classroom, I made sketches of the classroom and took pictures. I used various focusing tools for my observations, such as single-sense observations, lens specific observations, and wide-angle observations (Uhrmacher et al., 2017).

Observing myself proved a bit more difficult, which is part of why I decided to seek “others of similarity” to help me draw out self-reflection (Chang, 2016). I also used journaling, photography, and art – such as painting, drawing, and writing short poems – to help me reflect on my own work. What ended up being surprisingly useful as a means of internal data collection (Chang, 2016) was creating reflective memos for many of the vignettes I wrote about my own intentions, expectations, and actions. I also did the same for the vignettes I wrote about my observations of the teachers, but instead of only focusing on my reflections on their practice, I noted what I was doing, seeing, and experiencing in that moment.

Artifacts. I relied quite heavily on artifacts to draw out details otherwise concealed by only focusing on the teacher in action – myself or the classroom educators. Most of the time I took pictures of the actual artifacts because they were actual items in their class: materials they used, a display board they created, or items kept around the room. I also collected planning materials, from the formal digital planning documents, to our flipchart paper brainstorming sessions and everything in between. My own professional journals – often consisting of lists, in the moment comments, and doodles – also proved incredibly helpful in recalling small details that were in the back of my mind until I reviewed them. Because of the digital nature of education and our world today, I also collected screenshots of Twitter and Instagram posts, digitally shared images, and PDFs of online publications written by myself or others. Both Ms. Billy and Ms. Mara specifically referenced me to their Instagram accounts for a better idea of some of the activities, lessons, and projects they have been involved in.

Variation and coherency. Across the entire study, my data collection techniques varied somewhat from participant to participant, as I responded to their preferences and needs. For example, Mr. Kit liked to have time to respond to questions and preferred to be emailed with follow up questions. Ms. Liz and Ms. Tanya preferred to answer my questions on the fly when there were a few extra minutes. For some teachers, like Mr. Kit and Ms. Tanya, I was able to spend long periods of times observing because my role was different in the primary years than in the early years. I was expected to attend fieldtrips, support teachers, and observe projects differently than in the early years. Additionally, the structural differences between the early and primary years had a significant impact on data collection. Early years ran on twenty-minute sessions; therefore, my observations were rarely longer than twenty minutes. Primary years ran on forty-minute sessions, so I was often able to observe for a longer period in one session. I had to tailor the interview questions for the teachers and myself slightly differently for the “others of similarity” in order to ensure that the questions made sense but were still parallel in nature to the initial interview questions the rest of the participants encountered. Like a gardener tending to her numerous plants, I found that even with this variety of data collection tools, I was able to collect data that led to a coherent story of the whole community because I was being responsive to my participants needs as well as to the environmental milieu (Connelly & Clandinin, 1991).

Validity, structural corroboration, and referential adequacy. In order for any of this research to be meaningful, it must also be useful. Eisner writes, “What we can productively ask of a set of ideas is not that it is *really* true but whether it is useful...and expands one’s intelligence to do one’s work in more complex and subtle ways” (2002a, p.

236). At the crux of validity is not pure objectivity, but whether or not we can come to a shared understanding of what the criticism offers. Educational criticism relies on structural corroboration and referential adequacy to support validity. Structural corroboration means the whole story makes sense in light of the data collected, the themes identified, and the presentation of the same (Uhrmacher et al., 2017). Structural corroboration was provided in this criticism by ensuring that what I stated was backed up by what I observed and described, using direct quotations, rich description, and specific details as often as possible. Referential adequacy requires the connoisseur to check with others outside themselves as to whether or not the findings are of use. Ongoing cross-checking created balance between what I revealed or concealed in relation to the participants' experience of the situation. Often this came simply in the form of impromptu question asking. For example, I when I observed a lesson, I would make notes about what I thought might be a particular intention or realization of an intention. In debriefing after the class, I would ask the teacher to what their expectations or intentions were, and if they thought they were met, and compare that to what I wrote down. My style of leading teachers is more that of a coach, using open-ended questions to probe deeper, as well as providing direct and honest feedback when requested. Teachers, including the participants, often told me they appreciated getting such direct feedback and immediate opportunities to discuss their teaching to support their development as ecological educators.

Additionally, referential adequacy and validity of the data are strengthened through interpretation and evaluation that calls on existing models, theories, and ideas to illuminate educational significance or call attention to a unique aspect in the findings.

Throughout both the analysis and representation phases of creating this criticism, I referred to the literature and theories surrounding and supporting ecological place-based education and artistry in teaching to help me make sense of what I was seeing, hearing, and otherwise experiences.

In particular, the role of theory in educational criticism builds referential adequacy by providing structures for analysis and creating a space for "consensual validation" around the topic of interest (Eisner, 2002a, p. 237). For this study, evaluative frameworks like Eisner's school ecology (1992) as well as certain theories or approaches, like ecological literacy (Orr, 1992), creativity theory (Kaufman & Gregoire, 2015; Torrance, 1993), judgement artistry (Paterson et al., 2006); teacher artistry (Eisner, 2002a) or ecojustice education (Martusewicz et al., 2011) helped to highlight patterns or relationships that might otherwise have remained concealed. I looked for themes through on-going data analysis, sometimes through more traditional coding methods, such as process and in vivo and sometimes more creative methods such as poetic annotation, reflective drawing, Venn diagrams, and creative storytelling (Chang, 2016; Saldaña, 2016; Uhrmacher et al., 2017).

Experiments with Magical Realism

As has been discussed in other sections of this dissertation, I encountered a significant obstacle along my research journey when I unexpectedly lost my job at the school in which I was conducting my research. This was not only a logistical setback, but it was also a massive disruption to my personal and professional life. As I continued to sort through the data, I noticed significant mental blocks when it came to making room for open-minded analysis and interpretation of my experience at Desert School. What emerged over time and many iterations, was a boundary crossing educational criticism. While many aspects of this dissertation are easily recognizable as “scientifically based research” of the “gold standard” (Barone, 2007, p. 456), I also chose to incorporate aspects of magical realism in the presentation and interpretation of the findings, specifically within the description of the my experience of curriculum creations as well as the creation of the learning garden found in Chapter Four. In the following paragraphs I will explain the rationale behind this choice of narrative construction (Barone, 2007).

Although the ideas and experiences presented in Chapter Four draw from the teachers’ and my actual experiences at Desert School, I presented them in the form that best allowed me to bring my private experiences to the public realm (Eisner, 1994). Some will undoubtedly ask why the magical realist, hero’s journey format seemed the more effective choice for aspects of this educational criticism, especially the auto-criticism. Instinctually, I would echo Ellis’ idea that autoethnography found her (Ellis, 2004); magical realism found me. More intellectually, my answer comes in several parts.

The first reason for trying something more creative and less straightforward for aspects of my dissertation dealt with me trying to find a way to make sense of my situation given the unfortunate (for me) ending to my time at Desert School. For several months after my contract was cancelled, without warning or cause, I was both furious and heartbroken. When I should have been working on writing my descriptions, I was instead doing everything I could to avoid looking through the data I had collected and contributed to with all of my heart. When I was able to start analyzing the data, I initially was only able to see the negative – all the ways the school, the other administrators, the teacher participants, and I had messed up, done *everything* wrong. While social science and educational research can tend towards this “focus on pathology and disease rather than on health and resilience” (Lawrence-Lightfoot & Davis, 1997, p. 8), I am of the mind that “seeking that which is of value” (Uhrmacher et al., 2017) will often emerge as we “seek to illuminate the complex dimension of goodness” within a situation (Lawrence-Lightfoot & Davis, 1997, p. xvi). I wanted to be able to see the good in our experiences, but I was failing to through more traditional data analysis and descriptive representation. I had to find a different way.

The second part of my answer had to do with what emerged intuitively, almost automatically, when I stopped actively struggling with my mind and started listening to my heart. One day, tears streamed down my face, I flipped back and forth between two screens – the “intentional themes” and “artifact collection notes” – from which I was getting nothing and adding nothing. I had done initial coding and started on the secondary round of coding; I had coded attributes and picked out participants words and phrases for in-vivo coding…and yet. Saldaña writes that “Coding is not a precise science; it is primarily an interpretive act” (2016, p. 5). So, I stepped away from the computer screen and piles of notes and a cloud worth of pictures. I sat down to write, thinking a reflective memo might get me somewhere, and I ended up spilling out pages and pages of ideas, all of which started with the following:

> “Reflective memo – When I stop “thinking,” when I get out of the intellectual place, where everything has to have a process that is validated and reliable, when I just describe what I see in my mind’s eye when I reflect on my experience in this setting is…A group of committed, curious, and kind individuals who came together to create something entirely unique, without a real plan. We were making it up as we went along…There were quite a few obstacles thrown at us – mostly unintentional, many structural – and we were exhausted and exhilarated most of the time…This [situation] has left me feeling taken advantage of, used and discarded, suddenly without a home or a purpose…I’ve lost sight of myself in an effort to just keep the brush moving…I am both afraid and excited that I need to

> create something I really love even if everyone thinks it is worth nothing, if it is too nontraditional with regards to academia. Here is what I envision...A sort of adventurers notebook, chronicling the hero's journey from the idea outward into the desert…"

The memo continued, and I laid out the general outline of what is presented in Chapter Four. Interestingly, this laying aside of conventions opened up a flood gate for me with regards to the research. I found myself energized and inspired. Suddenly, with my imagination awakened (Greene, 1995), the themes I had been struggling to organize and make sense of started to emerge from the wreckage that my life and research, at that point, seemed to be. While those themes – the ones presented in this final work – took almost two more months of playing, researching, and evaluating to name with confidence, this "ah-ha" moment (Csikszentmihalyi, 2013) helped me to reframe and refocus, while also reengaging the enthusiasm, curiosity, and imagination that sent me down this path in the first place. Later, reviewing Saldaña's coding manual during further analysis, I came across this sentence, "I must also emphasize at the very beginning [of the book] that *there are times when coding the data is absolutely necessary, and times when it is most inappropriate* [emphasis in original] (2016, p. 2). As I often told my teachers regarding ecological literacy, finding a way through this messy time was both a process and a product. The act of writing creatively allowed me to do the scholarly work I needed to do in order to create the requisite dissertation with an open-heart and clear(er) head.

I share this here because this process of auto/educational criticism was as much about methods and methodology as it was about me interpreting and making meaning from the situation of being a Senior Leader and ecological education specialist at Desert School (Eisner, 2002a). This process was also a reflection of what I believe is my own inventiveness and innovation when the rules governing my world – *you have a job, you* *live here, you do this thing* - were suddenly tossed aside. What ended up in the stories and descriptions of Chapter Four is what I envisioned in that spontaneous reflective memo in a moment of intense disconnection – from myself, my work, and my passions – and allowed me to start to eke out a new ecological niche, to begin to find my way home. Rezac discussed the import of arts-based approaches to research and analysis within auto-criticism, explaining that painting allowed her to "let go of past perceptions and adopt nonattachment, and a freedom in expression, as I painted through the interpretation" (2019, p. 129). Inspired by her artistic analysis and presentation, I found myself better able to encourage both my intellect and intuition to show up more fully as I navigated the analysis and representation phases. Deciding to use fictional narrative construction and magical realism helped me to let go, to open up, and to look closely at my experience from a different perspective. It was in many ways transformational and truly educational (Dewey, 1934). Rezac wrote, "I believe that to more objectively address the subjective we must first allow ourselves to let go" (2019, p. 23). When I first read these words, I didn't fully grasp their meaning within educational criticism and auto-criticism. Reading them after experimenting with magical realism, I knew these words to be true.

My final reason for choosing to incorporate magical realism into my dissertation, is related to the larger picture of ecological education. In discussing this approach, my advisor, Christy, asked me somewhat rhetorically, *why* magical realism, why use it, why is it a thing, and why it was necessary in this work. While even the scholars have yet to agree on a singular definition or theoretic framework guiding magical realism as a literary form (Zamora & Faris, 1995), right away I was able to offer an initial answer. Since I was young, I have studied and loved the Spanish language. I had taken many trips to Guatemala and Mexico, and the influence of Latin American culture, and especially literature, played an important role in my life. I grew up with the story of the three sisters and *la milpa*. I visited the sacred sites of Pachamama, feeling fully the generosity of Mother Nature in the heaving landforms of the Andean countryside. I have read the infamous *One Hundred Years of Solitude* by Gabriel García Márquez in English and in Spanish, as well as many of his equally magically realistic short stories. Intuitively, I recognized that I was drawn to this literary form because of my belief that something of this magic was missing from much of the educational research around ecological and place-based education.

Interestingly, as I dove into the scholarly work surrounding magical realism, I came to more fully understand how this literary mode was not only intuitively a good fit, but theoretically well-suited educational research in ecological place-based education. Primarily, I was interested in the way that magical realism is seen as a literary mode of the voices at the margins. While historically speaking, this has meant most often the marginalized voices of the “Third World, a condition thought necessary to the currency of the term [magical realism] in literature” (Slemon, 1995, p. 407), I recognized an echo of marginality in the need to tell the stories of ecological education in a way that raises them up as something worthy of attention, as something that disrupts the educational system as it is, if only in the smallest way. Slemon explains that “the perception that magic realism, as a socially symbolic contract, carries a residuum of resistance toward the imperial center and to its totalizing system of generic classification” (1995, p. 408). Ecological education as I know it, carries more than “a residuum of resistance” towards traditional schooling; it in fact “aims to work against the isolation of schooling’s discourses and practices from the living world outside the increasingly placeless institution of schooling" (Gruenewald, 2003, p. 620). I believe that in ecological education we have often lost sight these aims. Particularly, I believe we have lost sight of the magical and wonderous inherent in ecological education while focusing in on "reality," or that which others more easily recognize as educational in a normative sense (Carson, 1965). So much of the research around ecological education focuses on looking at the ways that ecological, place-based, environmental, and sustainability education improve test scores, raise attendance rates, help students read at grade level, or improve their level of academic engagement (Gruenewald, 2005; Lieberman & Hoody, 1998; Powers, 20). I do not diminish any of these as valuable outcomes, and I believe that ecological, place-based education researchers have focused long and hard on examining what is more easily measurable as a means of communicating to the center from the margins. As Gruenewald writes, "Simply put, environmental and sustainability education have never been central to the culture of teacher education, if they are a part of it at all" (2005, p. 142). And still, this metaphorical bowing to the educational powers that be for the sake of playing the game seems in some ways to defeat the purpose of ecological place-based education. As Greenwood puts it, "I would argue that to embrace the policies and objectives of government schooling is often to embrace aims and assumptions about education that stand in opposition to the aims of environmental and sustainability education" (2010, p. 145).

I would argue that the same can be said for educational research that fails to push against convention when that push is actually the more useful method of presenting findings and making meaning. Most ecological education research is presented in forms that are traditionally accepted as academic and scientific, perhaps at least in part because “fiction remains a no-no, a mode of expression…that is simply off limits in conventional academic discourse” (Bank & Banks as cited in Barone & Eisner, 2012). While there are various examples of fictive and imaginative literature presented in education studies, this is still not a common form of narrative construction in education or curriculum studies in particular or qualitative research in general. Nonetheless, like the first steps of a place-based educator “taking the risk to try it” (Gruenewald, 2005, p. 272), I have taken a risk and incorporated magical realism into the descriptions of my experiences at Desert School. Fiction, Greene often implores, can help us to make sense of the world around us “in our longing for something better than unacceptable present conditions” (Greene as cited in Barone, 2007). While I did not set out to be unconventional in my original purpose of undertaking this study, I believe the “ex-centric” use of magical realism to communicate about ecological place-based education helps to draw out both the beauty and flaws found within this situation in a way that is both uncomfortable as well as aesthetic, as useful and challenging as it is unconventional (Barone, 2007; D’Haen, 1995, p. 194).

In his influential work *Ecological Literacy*, Orr (1992) writes of the need to redirect our attention towards the “software” as opposed to the “hardware” of sustainability. He writes, “Education for sustainability might do well to reflect the rhythms of life itself, moving between sobriety and mirth, wisdom and foolishness, work and play, sacred and profane, awareness of limits and limitless hope, suffering and celebration” (1992, p. 139). I believe that, in these quickly changing times, it is even more imperative to use alternative modes of representing and evaluating ecological education in action that embrace these rhythms and make space for different ways of expressing meaning, even if it means taking a risk and stepping outside the norm. For some magical realism may be a step too far to the edge, but for others this infusion of wonder and delight may be just what is needed to bring our focus back to the holistic, connective, and integrated aims of ecological education (Orr, 1992).

Notes on Backyard Research

This study would undoubtedly be considered “backyard research,” which is loved by some and warned against by others (Glesne, 2016, p. 49). In the beginning I was both daunted and incredibly excited by the opportunity to research in my own place of work. The situation I was in – Director of Education for Sustainability at a new ecological, place-based school - was in many ways my ideal one for research, although I had always figured I would be more of a passive observer than a self-reflective participant observer (Creswell, 2014). When it became clear that I was expected to conduct and publish research as part of my role, I began to consider the possibilities in front of me. Glesne describes some of the benefits of backyard research: ease of access and scheduling, pre-established rapport, useful for professional development, for example. I sought to create an educational criticism that reflected the constructivist perspective by making sure to use multiple forms of data, from direct quotations, to sketches and drawing, to reflective writings by participants for example, which have been examined from many perspectives and over time. The backyard research approach was supportive of all these aims and turned out to be a real strength of taking on research in this particular context.

As will be described more in Chapters Four and Five there was one major pitfall that was unforeseen and entirely unfortunate. At the end of the first school year, without warning or cause, my position – along with several other middle and senior level positions – was cancelled. This was a major disruption to both my life and my research. While I was able to conclude my data collection with the participants through alternative follow up and final interviews, my energy and spirit around the research, as well as my professional relationship with the teachers and site were significantly altered. This experience was a part of the story that will be described in Chapter Four. Interestingly, this experience, along with follow up reflections and conversations with teachers, brought to light valuable implications for ecological education that might otherwise have remained concealed had this not happened.

Concluding Thoughts: Dune Building

This study allowed me to examine what happens when the “sin of omission” (Orr, 1992, p. 85) is corrected, when ecological place-based education becomes the ground on which we build our schools. Without this sort of education, we continue to move blindly toward an unseen ledge, never acknowledging our ability to use our creativity and imagination to change the path we are on. Without clearing spaces for imaginative thinking, our situation may seem rather bleak, monstrous, and frighteningly complex, like a snarl of briars or an impassible river. As David Orr writes, “The darkness and disorder we have brought to the world give ecological literacy an urgency it lacked a century ago” (1992, p. 86). Ecological place-based education acknowledges this darkness while remaining grounded in a sense of wonder for the world around us, a love of life, and the desire to learn to live well in the places we inhabit. Ecological place-based education holds up a light in the darkness as we set down new footprints in the sand. In this study I examined the intentions, expectations, actions and characteristics of teachers implementing ecological place-based education for the first time in order to create a detailed picture of this experience and examining the particular to better understand the general (Flinders & Eisner, 1994) as a means of forging a new path forward on this fertile ground.

CHAPTER IV

DESCRIPTION AND INTERPRETATION

Telling of Educational Adventures

Eisner wrote of the actual educational criticism serving as a guide through an experience, helping the reader to see what we would have otherwise overlooked or failed to comprehend (Eisner, 2017). I see importance in also presenting myself, the participant-researchers, as a guide, not in a metaphorical sense, but as one who has “visited a place before and knows a great deal about it” (Eisner, 2017, p. 74). Just as you might hire a guide to lead you through a jungle or across an unknown landscape, I will guide you through the following journey with care, knowledge, and unique insight.

As your storyteller, guide, and the researcher of this educational adventure, my personal experiences and worldviews, as well as my scholarly knowledge allowed me to “discern and disclose” that which is important to answering the research questions driving this study (Eisner, 2002a; Uhrmacher et al., 2017). As I have noted before, I am an artist and a scientist, a painter of worlds with color and words and a studier of ecosystems with fieldnotes and quadrats. In Chapter Four, I applied this ecological aesthetic lens to describe and interpret the experiences of the teachers and myself within the Desert School ecology. The following chapter presents those stories and understandings collected during my time at Desert School in order to address the questions “How is life lived in this classroom?” (Eisner, 2002a, p. 226) and “What does this situation mean to those involved?” (Eisner, 2002a, p. 229).

In educational connoisseurship and criticism, the connoisseur, when stepping into the role of the critic, must share with the public that which they have noticed in their private observations using vivid description as well as personal and professional interpretation (Eisner, 2002a, 2017). The descriptions presented draw on the observations, notes, and artifacts I collected over the course of this study. Description “enables readers to visualize what a place or process is like” (Eisner, 2017, p. 108). The descriptions are paired with interpretation. Through interpretation the critic attempts to make meaning of what they have experienced. Eisner writes, “If description can be thought of as giving an account of, interpretation can be regarded as accounting *for”* (Eisner, 2017, p. 95, emphasis in original). The critic applies not only scholarly theory and ideas, but also their own experiences and conceptual frameworks to the interpretation of educational situations. “This is so because what one can interpret depends initially on awareness,” writes Eisner (2017, p. 117). In this study, the description and interpretation of the findings are presented as seen through my distinctly ecological aesthetic point of view, which draws on ecological theory, aesthetic theory, and my own experience as an ecological place-based educator. Throughout Chapter Four, the themes are presented as they relate to the first three of my research questions.

The research questions that guided this study were:

Q1 What are the intentions and expectations of educators, including the researcher as participant, about their roles in a new ecological, place-based school?

Q2 How are these intentions and expectations realized, or not, within the school ecology?

Q3 What aesthetic judgements and creative attitudes do teachers and the researcher express as they adapt to a new school and ecological, place-based curriculum?

Q4 What is the import of using magical realism within educational criticism and connoisseurship?

Q5 What are the implications of the findings for ecological, place-based schooling in particular and education in general?

Organization and Presentation of Themes

Briefly, the descriptions are organized for each teacher participant into Part 1 and Part 2; my auto-criticism is presented in large part in the beginning of the chapter, then woven throughout, and with a significant auto-criticism vignette towards the end of the chapter. Part 1 for each teacher participant is presented through fictive narrative constructions utilizing magical realism as a literary mode and drawing directly on dialogue and observations from interviews and follow-up conversations (Barone, 2007). The rationale for using magical realism in the description and presentation of findings for this specific education criticism is presented in Chapter Three. Within Part 2 for each participant, and interwoven throughout *The Snail* descriptions of my own experiences, I present the findings related to my second research question, “How are these intentions and expectations realized, or not, within the school ecology?” The vignettes described in Part 2 for each participant are organized by the structural, curricular, and pedagogical dimensions of Eisner’s ecology of schooling (Eisner, 1988, 1992, 2017) in addressing the second research question.

The set of themes presented in Part 1 relate to my first research question and deal with the intentional aspect of the school ecology. These are scattered throughout Part 1 for each teacher participant and woven throughout *The Snail* stories for me as the researcher-participant. The themes illuminate our intentions and expectations for Desert School in its first year; the themes that emerged were *hopeful vision, holistic learning, responsive action*. There is an overarching theme of *ecological integrity* knitting these three themes together, but it is often more subtly addressed in the vignettes. When the themes are presented, I do my best to use the specific terms above, written in italics, to help the reader recognize them as such. Within Part 2, I built upon the intentional themes of *hopeful vision, holistic learning, responsive action*, and *ecological integrity*, and was guided by my third research question, *What aesthetic judgements and creative attitudes do teachers and the researcher express as they adapt to a new school and ecological, place-based curriculum?* The complementary set of themes that emerged helped further organize and shape the descriptions and interpretations with a distinctly ecological and artistic brush. The themes organizing the creative attitudes and artistic judgements are *imaginative diligence, open-hearted connection, deliberate spontaneity*, along with the overarching theme of *community ecological artistry*. They are presented *through* the vignettes and illuminate the *qualities of the artistry expressed* by participants within the ecological community at Desert School. These themes emerged as I examined the teachers and my actual practices in light of our intentions and experiences, as seen through my distinctly ecological aesthetic point of view – that meeting place between the head and the heart (Orr, 1992) in a dynamic community ecology. While all of the themes outlined above will be further interpreted and evaluated in Chapter Five, I present them here to help organize and focus the flow of Chapter Four, as well as to clearly distill the “larger lessons offered” within this criticism to guide the reader (Eisner, 2002a, p. 237).

Suspending Belief, Signifying Magic

Employing magical realism as a literary mode of this educational criticism, especially within the sections representing my experience through auto-criticism, proved to be exciting to write but difficult to organize for public consumption, especially of the "scholarly" sort. Barone and Eisner explain, "The identity of a work of arts-based research as fact or fiction may depend on a complex dance between textual signals – located both within the design elements within the text and in the context in which these elements are confronted – and the purposes for which the viewer/reader is enabled to – and chooses to – use a text" (2012, p. 114). I deliberately choose not to say what is fact and what is fiction, as this is part of the role of the storyteller in magical realist tales: to allow a certain amount of ambiguity to enter into the story in order to "destabilize the dominant mode of realism" (Faris, 2004, p. 4). As the reader ventures through the descriptions, it is possible that they will, at times, lose track of what is real and what is fictional. Or they may assume that they know for sure what is real and what is fictional, even if I do not "empirically verify" their assumption (Faris, 2004, p. 3).

To guide the reader along their way, I present Faris' brief definition of magical realism here to help the reader wrap their head around the essence of this literary mode. "Very briefly defined, magical realism combines realism and the fantastic so that the marvelous seems to grow organically within the ordinary, blurring the distinction between them" (Faris, 2004, p. 1). While I have grown up encountering this form in stories, songs, and books, I also recognize that this arts-based form of representation may be difficult for some readers accept or even navigate (Barone, 2007; Barone & Eisner, 2012). To help the reader stay on course, I provide the symbol ~ to demonstrate that "magical realism is in play here." In mathematics, ~ denotes "approximate" or "proportional to." In other words, ~ says something is sort of the same, mostly, but maybe not exactly. This seems to be an adequate way to let the reader know that the distinction between reality and fantasy will be blurred, somewhere, somehow.

Furthermore, Barone and Eisner suggest "for ethical reasons…that arts-based researchers send explicit, indeed crystal clear, signals about the purpose that they would like their text to serve" (2012, p. 119). Therefore, I want to encourage the reader to set aside their need to seek "truth" in this work, and instead look, listen, and feel their way towards meaning, *especially* in the descriptions and vignettes marked with ~. That said, I want to be clear that, like magical realism, the bulk of the descriptions in Chapter Four are realistic descriptions of the situation, even factual, written as they might be by any qualitative researcher hoping to present a valid, reliable, and credible nonfiction text. It draws on hours and hours of observation, critical analysis, and theoretical application. The descriptions of the landscape, roads, buildings, learning garden, and rooms are based on what I saw firsthand during my time at Desert School, living and working in Desert City for two years. The majority of the dialogue is verbatim, taken from interviews, follow ups, emails, texts, and observations of the participant. As I novice researcher, I hope that this is apparent and appreciated in the artful and evocative literary descriptions, as well as in the more imaginative storytelling demarcated by ~. The point, however, is not to emphasize the truth on which this work is based but to accentuate the significance of lessons offered by this situation for ecological place-based education. An aim of magical realism is to disrupt our patterns of seeing, hearing, and feeling just enough to force us to slow down, to read more closely, and to pay attention to the situation in a different way. In the reading, I hope the reader can suspend belief as much as needed and simply allow themselves to be pulled along like grains of sand across the dunes.

The Storyteller Explains Herself

So, who am I, really? I am me, the storyteller, the participant-researcher, the connoisseur, and the critic. Parker Palmer writes that “the personal can never be divorced from the professional. ‘We teach who we are’ in times of darkness as well as light,” and I have always found this to be true (Kindle Loc. 502, 2017). Connelly and Clandinin emphasize the importance of teachers working to understand our personal experiences in schools in order to figure out how we want to be and how we want to act in the future. Teachers are storytellers, they suggest, and we are continually

> telling and retelling stories about our past…Curriculum reform, as we listened to the teachers, sounded less and less like either of the traditions [of school reform focused on the tension between authoritative prescriptions and the ‘primacy of teachers and students’] and more and more like a process of living out the stories we tell ourselves in order to make meaning of the experience (1991, p. xv-xvi).

Connelly and Clandinin write that “A curriculum can become one’s life work” (1991). Chapter Four, *Descriptions of Artistry in Ecological Education*, explores a period in my life when I “taught who I was” and shared more than a bit of myself with the teachers and staff as a senior leader at a new international school dedicated to ecological literacy, sustainability, and environmental justice. As will hopefully be illustrated in the vignettes and stories that follow, my role at this school was dauntingly complex and surprisingly nebulous down to my last day on campus.

As the Director of Education for Sustainability, I was deeply involved in almost every aspect of the school development, from curriculum design to green space development and new building construction, from teacher education to community outreach and artistic programming across the school. I was even tasked with training and upskilling the *other* senior leaders in ecological and sustainability education. The broad-reaching nature of this position meant that as I went through the numerous personal notes, observational records, conversational transcripts, and artifact collections I accumulated in my eighteen months on this project and for this research, I was surprised to note how difficult it was to extract my experiences from those of the teacher participants and the school development in general. Often times my detailed notes cut off midsentence, only to be later filled in with a comment about having to support the class, help the teacher, or respond to an ongoing crisis in another part of the school. Sometimes an entire day was summed up in a series of disjointed bulleted haiku-like memories, traversing the varied hills and valleys of a day in my life at Desert School.

As I sorted through and analyzed all that I had seen, heard, smelled, touched, felt, and otherwise experienced, I was guided by Eisner's interpretive question "What does the situation mean to those involved?" What I saw emerge with this question in mind was a diverse and interdependent ecological community. Truly, we were a collection of individuals with unique pedagogical voices and curricular interests, with different content knowledge and life experience, with distinctive educational values, intentions, and expectations. We all relied on different systems and structures to support teaching and learning at our school and played different roles. Within our school, we – the teachers, staff, administrators, students, families, and volunteers – formed an "integrated corpus, a group of individuals joined together to bring about something none of us could do alone" (Tippett, 2019). Ecologically we were greater than the sum of our parts, and I hope that is illuminated in the following snapshots and tales.

In this chapter, the teachers' experiences are interwoven amongst my experiences in an attempt to create a coherent whole, a story representing all of our experiences as observed and interpreted through my personal and professional connoisseurship. I am an experienced ecological place-based educator with over a decade of teaching experience. This is contrasted with the three classroom teachers approaching ecological place-based education through project-based learning for the first time. I used a combination of the more "traditional" non-fiction vignettes of qualitative research (Uhrmacher, et al., 2017) and fictive narrative constructions of a heavily arts-based approach to educational research (Barone, 2007; Barone & Eisner, 2012; Eisner, 2002b) to create this educational criticism. As explained in Chapter Three, I chose to use magical realism as the form of representation for a large portion of the descriptions related to my own experiences, as well as to describe the intentions and expectations of the teacher participants and transition between participants.

"Artistic approaches to research are less concerned with the discovery of truth than with the creation of meaning," Eisner writes (1985, p. 198). My aim in taking this approach was to create something that stretches the imagination while still touching reality, to generate "images that people will find meaningful and from which their fallible and tentative views of the world can be altered, rejected, or made more secure" (Eisner, 1985, p. 198). All of the descriptions are based upon actual situations and the majority of the dialogue is shaped by direct quotations from conversations and interview transcripts, emails, surveys, planning documents, professional development sessions, brochures and articles published by the school, and both personal and professional notebooks. That said, there are many instances where the reader is asked to suspend their belief while celebrating the magic and possibility found in everyday life, as is the purpose of magical realism (Roh, 1995). As Wilson, a literary scholar, writes, “The magic in magical realism names the textual conventions that, expanding the potential of storytelling, foreground its literariness. Different semiotic domains are allowed to clash (and to interpenetrate) in order to tell richer, more diverse tales” (Zamora & Faris, 1995, p. 226).

As I also experimented with the nascent genre of auto-criticism within this study, entwining my own stories with those of the other participants. In writing the participant descriptions, I often struggled to untangle my experiences as a participant-researcher from theirs as participants. The trickiest part was finding how to blend my stories – the auto-criticism – which are inspired by my actual experiences and told through the magical realist approach, with those of the other participants in a cohesive manner. The interwoven descriptions of my experiences and reactions as a participant-researcher among those of the participants signify my attempt at reinforcing the structural integrity of the telling while adding a diverse and unexpected voice to the scholarly work on ecological education in action. There is a clear reverberation of the “ethnographic I” within these descriptions as I attempted to portray my role within the ecological community (Chang, 2016; Ellis, 2004).

In the beginning, I was very much the principal artist, envisioning intentions, creating the school curriculum, and designing the indoor and outdoor green spaces. In the earliest descriptions, I am the primary voice and only participant. In terms of gardening, this might be thought of as the time spent preparing the soil.

As the school year got underway, my role became much more that of the art teacher, like my teacher Jude in my own life, observing, guiding, and supporting Desert

School teachers as they learned and practiced a new craft. In this role, my own actions and beliefs were intricately connected to those of the teachers. Within the descriptions at this point, our voices begin to harmonize, and the ecological community starts to come to life. The vignettes of the teachers in action might be seen as the growing season, in which a gardener tends the land, transplants seedlings, and addresses the problems that crop up. Chapter Five will pick up the story after the growing season ends.

Chapter Four begins with a retelling of how I ended up at Desert School. This was a question I posed to every participant in the initial interview, with the intention of exploring a bit of their "personal curriculum" (Connelly & Clandinin, 1991). They all had interesting stories including their personal influences, educational experiences, and rational for even considering Desert School in the first place. Their stories inspired me to dig in a bit as to why and how I was here. This section, beginning with The Snail, launches the "hero's journey" that gives structure the rest of the chapter: the call to adventure, the setting off; the passing from the known into the unknown; the meeting of helpers and mentors; the depths of despair and of course the transformational climbing out; the return from the unknown to the known (McKitterick, 2018). Along the way a guide, Lalo, is introduced who helps ferry us between the magical and the mundane of life at Desert School for all participants. After some time, we will meet the teachers, and the journey changes from one of solitude to one of community in the making.

I have done my best to keep a continuity of voice throughout while also clarifying when magical realism is at play. Several of the vignettes below are lifted almost word for word from my journals, and it is interesting to point out that all quotes from taxi drivers are authentic, captured just after they spoke because I found their words so powerful and possibly prophetic. That said, I have intentionally *not* gone through each and every moment and interpreted it for the reader or specified what is absolute truth and what is fiction, because I believe in letting the power of imagination, experience, and intuition guide the reader towards their own conclusions (Greene, 1995). Additionally, I was following the lead of Rezac (2019), a brave pioneer in auto-criticism who used painting as an analytic tool and representational form. Of her arts-based work she wrote, “this arts-based interpretation leans away from putting words around the process and its outcome, inviting free interpretation. I’ve aimed for a balance of providing details of my experience employing auto-criticism as an emerging method, while leaving as much interpretation of the arts-based approach to the reader as possible” (2019, p. 112). Similarly, I have provided theoretical and experiential interpretation in many places, but I have also left some sections much more open to interpretation by the reader. I have done my best to include honest moments of frustration, from myself and the teacher-participants, while also committing to “look for the good” (Lawrence-Lightfoot & Davis, 1997) and find “what is of value” for informing curriculum and instruction for a more just and beautiful world (Eisner, 2017; Uhrmacher et al., 2017). Like the wave smoothed granite and wind polished quartz I collected in my childhood, I offer the following stories – both exact and extravagant – as rocks dug out from a pile of sand and presented as precious stones.

The Participant-Researcher AKA The Snail

More than once in my life I have been compared to a snail. Perhaps it is my size – I am a bit small. Perhaps it is the speed and intentions with which I do most things – I am quite slow and deliberate. Perhaps it is my penchant for salad greens and playing in the dirt – I am a huge fan of both. But just as likely it is because I have spent a good part of my life carrying my world on my back, moving from place to place, and making a home wherever I go. Over the years I have grown fond of this comparison, and I don't mind thinking of myself as The Snail, taking on this creature as a totem of sorts. The snail is strong, sensitive, introverted, and patient, a bit soft on the inside, but quite tough on the outside. They are curious – have you ever wondered why a snail decided to take the exposed overland route across the pavement instead of staying in the safety of the hedge? They help clean up the messes left behind, and they are pretty good at recycling and even upcycling a forest floor. They are creators, doers, movers. Like me. In the winter of 2018, I found myself once again packing my snail shell full of clothes, books, and pictures, readying myself for a big overseas move where I would take on a role I had only ever imagined in my heart.

The flame of curiosity was lit by a well-worded job description, an impromptu application, a short phone call, and a brief visit to Desert City – a place I had never envisioned as a home for myself. Despite an interesting job and good friends in North America, my heart and mind were ready for adventure when I was offered the position of Founding Director of Education for Sustainability at an international primary school dedicated to sustainability and ecological literacy in the Middle East North Africa (MENA) region. It took only a few pro-con lists and a couple days of thinking before I accepted the job. This was my second move abroad in my life, and my sixth move in general in ten years. What can I say? I am a traveler and a wanderer. *Deliberately spontaneous*. A snail.

The Snail Hears the Call of Adventure

That last day before setting out dawned with a gray sky and winter weather advisories. My car was packed full, and the key to my old apartment was left for the landlord. I slid into the driver's seat and checked the rearview mirror. A sliver of light made its way from the back window up to my eyes, and I laughed to myself. Another move, another trip, another car packed to the brim full of what, exactly? I carefully checked the side mirrors for a second, then third time, and I pulled away from the curb. I saw this move as an opportunity to be a part of something big and unique, as hopeful as it was visionary. My imagination ran wild with the possibility of the school we –the teachers, the other administrators, the students and families, and I – would build. In many ways I felt that this was what I had trained for my entire career. I had taught for six years as a science and math teacher in both primary and middle schools; I spent another two years as a place-based educator and teacher trainer in civic and environmental education; I was an environmental scientist by training and a curriculum designer by passion; my greatest interest in education was teacher education for sustainability and ecoliteracy. I was creative and hard-working, *imaginatively deliberate*, and comfortable in chaos. As one teacher would later tell me in an interview, "it was a no brainer."

I thought about a conversation I had with friends over drinks a few days earlier and had to smile. When I announced to my running buddies that I would be moving abroad, most of them lamented my leaving and excitedly asked questions about the new job. One of them just stared at me over his beer. "Why…" he started a question, then trailed off. Bringing a hand to the side of his head, then pointing it at me, he finished his thought, "Why are you so curious?" The table erupted in laughter as my friend continued with a smile. “How can you stand it? To have no home base? To move so much? I can’t even imagine leaving to move to another state, let alone a new country,” he said. I felt a flutter in my heart as he needled a sensitive part of me with his questions.

“As much as you can’t imagine leaving,” I started, “I can’t imagine not going. The pull of the unknown is too great, the excitement of the journey too much to pass up. You know how we run these mountains? How we dream up an idea, plan out our routes and decide what we are going to take with us and how we are going to get there? How we check the weather for days in advance but still bring enough to be prepared for anything? How we train and train and train and still don’t know exactly what will happen on the day we set out? How many times have you had the most brilliant views on top of a mountain or the slowest, shittiest slog for miles and miles in the rain? Did you ever regret any one of those experiences, no matter the outcome?” He smiled at me and shook his head. “That is why I am so curious. This is just another adventure for me, a chance to use my imagination to do something new, and I can’t imagine anything except heading out the door for another run.”

The Snail Takes Flight

Out the window the flight attendants ready the plane for takeoff. Burly workers dressed in white and neon uniforms pull their hats down low against the winter wind and load the last of the baggage into cargo. I couldn’t help but pull out my notebook to capture this moment and the next and the next. I feel like I am on the brink of something big, and my hands tingle with anticipation. Brrrr. Brrrr. Brrrrcht. The last of the bolts are tightened. The external doors close with a slam. There is a flurry of movement up ahead as flight attendants deliver champagne and warm wash cloths to passengers seated in First Class.

My hands are freezing as the often are before takeoff, and I find it a bit ironic that in less than twenty-four hours I will be living in one of the hottest places on the planet. As I sit here, wondering about the sounds I am hearing throughout this big metal bird, I can't help but think of Southwest Middle School, where I started my "formal" classroom teaching career. During the inaugural year, as we were designing brand new curricula, testing them out with eager students, and critiquing our work together, Ms. Gold, the founding principal was our guide into the unknown. "We are building the plane as we fly it!" she would often say, and somehow for me it made the chaos seem a bit more manageable. She taught me to embrace the chaos with an open mind and big *heart*, finding ways to make *connections* between my life and my curriculum that kept me motivated and passionate, to *connect* with the people around me for support and care. She showed me how to see curriculum design and teaching as an adventure: everything could be planned for in advance, each detail overseen, each risk assessed and yet…

When I left Southwest Middle School, I felt as much an explorer as a teacher, an artist looking for something surprising and beautiful around which to build my life. This spirit travels with me even still, and for better or worse it has led me around the world, teaching, designing, observing, changing. As I head off to Desert City, I wonder what I will find, who I will meet, where I will end up. What has been proposed by the board is revolutionary, forward thinking, and so, so necessary. But is it possible? It will be fun, challenging, exciting, scary…big change again but nothing I can't handle... "Live the questions," Rilke wrote. I don't know what will come of this, but I have to go see. Here come the flight attendants. They are closing the overhead bins and checking seatbelts. There will be time for *deliberate spontaneity* in the future. For now, I suppose it's time to put the tray table away.

The Snail Collects Precious Stones

As the plane flew for hours and hours over oceans and deserts and icecaps, I thought about where I was going and how I ended up on this path across the earth. This was a question I would end up asking participants in my study, but my own reflections started early on in that adventure, just after takeoff. As I tried to make sense of my own trajectory as an ecological educator, images of myself as a child flashed through my mind.

I grew up with sand on my feet, as well as in my pockets and crunching in my mouth. It always had that sneaky way of creeping into everything, finding its way into the toe of my shoe and bottom of my bags, under the rugs and between the sheets. Growing up in the sand gives you perspective, I think. When things are easy it is like running down a dune, the sand cascading out from under you, pulling you forward on your journey. Walking back up at the end of the day, bags loaded with wet towels and collected rocks is a whole other story. Then the sand shifts beneath your feet, and you trudge one step forward, slip slide two steps back. In the evening a great wind dances along the dunes with delight, causing the grains to jump with joy – saltation it is called – all the while erasing your footprints but not your memories. I wondered how much of this upcoming adventure would be running down the dune, and how much trudging back up.

When I was little, my favorite place in the world was the shore of Lake Superior on Madeline Island. Up there the water was cold and clear, and the sand sparkled with flecks of mica and basalt. I spent hours with my goggles on, paddling my way through the shallows collecting “diamonds and gemstones.” When I grew too cold, or my parents called me in for lunch, I would sit in the sand, digging my feet in to soak up the warmth left by the northern sun. Lying on my stomach, I would watch the sand from eye level observing how the slightest breath sent grains flying, noting how the color changed from a bland tannish brown to a veritable rainbow pallet upon close inspection. Leaving the beach for the day, I always did my best to brush off every last grain, checking between my toes and behind my ears. At home we would shower clean, bundling into sweatshirts and pajama bottoms against the chill of a northern summer night, and yet…in the morning, upon waking, there it was: sand on my pillowcase, under the covers or sprinkled on the floor next to my bed, in many ways reassuring, a reminder I was exactly where I needed to be. Growing up in the sand gives you perspective, I think – a chance to look, then look again as grains emerge over time.

When I think of how I came to teach the way that I do, I think first of my time outdoors in the Northwoods and the beaches of the Great Lakes. In this place I learned to paddle a canoe and build a fire. In this place I ran wild through the trails, stalking chipmunks and scrambling over logs. In this place I found hidden flowers and the faintest animals tracks. In this place I sat out at night, watching for meteors, listening for wolves. In this place, where white pine and balsam fir stretched to the sky while I stared at the sandy ground, I was learning to imagine who I might become. I was setting off in my own way. Without doubt, those beach rocks were precious stones I would carry with me throughout my life.

The Snail Touches Down with a Hopeful Heart

I have to crane my neck over sleeping passengers to peer out the window from my aisle seat. It is early evening as the plane begins its descent over Desert City. The outlines of hundreds of tall buildings lit up by millions of tiny lights come clear as we circle our way towards the airport. The sun, having just dipped below the horizon, throws out the most brilliant sunset, and I take it as a good sign, a nod of encouragement and welcoming gesture from this unfamiliar place. I catch a glimpse of my reflection in the tiny window, and I see a happy smile on my lips and an anxious crinkle on my brow. *Here I am,* I think nervously, excitedly, but exactly where is “here” has yet to emerge. The plane bumps to the ground, the brakes engage, and as we come to a stop, the fasten seat belt sign dings off. “Please take care when opening overhead compartments,” the flight attendant announces, “as contents may have shifted during the flight.” *Indeed, they have,* I think to myself, feeling my heart pound in anticipation of all that is to come. *Here I am,* I repeat to myself. This is where it starts.

In this moment I realized the largeness of what I had just done, of the way everything that came before and everything I hoped for the future had landed on the tarmac with me. I went into the night with an open-hearted curiosity and the intention to learn everything I could about my new home. Kaufman and Gregoire in describing the characteristics and attitudes of creative people write, “Openness to experience, one of the ‘Big Five’ personality traits, is absolutely *essential* to creativity” (2015, p. 82). This openness and curiosity to what the world may offer allows for curious connections, meaningful collaborations, unexpected creations to emerge where they might otherwise have been missed or overlooked. Like the other teachers I met and worked with throughout my time at Desert School, so much of what we did reflected our commitment to *open-hearted connection* within our educational ecological community. Sitting on the tarmac, newly arrived in Desert City, with my luggage in cargo and my handbag waiting in the overhead compartment, I felt receptive, hopeful, and a wee bit impatient to get started exploring.

The Snail Explores Her New Home

The following vignettes capture the first days and weeks in my new role. Several of the vignettes are pulled directly from my personal journals, ones I have kept for years with regularity. The rest were constructed using my notes from discussions during the early days, including direct quotes from certain people, as well as my actual job description, and the documents I was provided to reference as frameworks. Additionally, memories were collected through various recall methods, such as creating an autobiographical timeline, time cycle descriptions, and collecting rich descriptions of cultural artifacts from the experience in consideration (Chang, 2016). As these vignettes are part of the experimental auto-criticism within this larger educational criticism, I drew on the principles and practices of autoethnography to inform my data collection and interpretation. As Chang writes, “Autoethnography values your personal memory…and [autoethnographers, as opposed to ethnographers] openly acknowledge your personal memory as a primary source of information in your research” (2016, p. 71). For many memories, I was able to cross reference my memory with a picture, digital post, or note found in the analysis of other data, which I believe adds to the reliability of the data. That said, interesting and surprising details were drawn out from these practices that I would have otherwise forgotten, given that they only existed in my memory. One important memory that surfaced was my conversation with Mama (described below), and my discomfort with her insistence on me renting a gas-guzzling SUV as a matter of not just safety, but also status, despite my role as the Director of Education for *Sustainability*. This was one of many examples of my experiences at Desert School, where ecological integrity felt disintegrated, where practice and policy did not represent the beliefs and values espoused by the school.

The Snail Gets Unsolicited Advice

I am here. Hard to believe, but I am here. At the moment I am still in a hotel, so feeling a bit displaced. I went to work today – checked in, met a bunch of colleagues. Everyone is busy and the office was buzzing with so many people. All the Directors are coming in, slowly. I suppose I met at least fifteen people. I also met T, Jane Goodall's right-hand woman. What a trip. This is a seriously big project, and it is so exciting. I never really thought this would be my reality. But it is.

A strange thing happened tonight, though. On my way back from a desert run, my taxi driver admonished me not to let myself get caught here, to do my best to do what I came to do and get out. "So many people get lost here," he said, waving his hand towards the dunes that passed by outside the car window…I want to write more, but I can't keep my eyes open.

The Snail Studies the Community Ecology

Today was my second day at work, and already we are moving at lightning speed, I am afraid I won't keep up. There is so much to say about only a few days. The commute to work is currently short – too short almost – as I have been put up in the five-star hotel in the same building as Desert School's head office. I took the elevator up to the 15th floor and stepped out into a jasmine scented hallway adorned with green and yellow striped sanseveria plants so vibrant I scratched the surface of one leaf just to see if it was real. My high heeled shoes tapped loudly on the shiny floors as I walked the short hallway to the office entrance. I felt awkward and unsteady in my fancy footwear, but I knew it was expected of someone in my position in this culture.

The main door was fingerprint protected, so I rang the bell. A small woman with chin length hair dyed a reddish-brown opened the door. “Miss Emily!” she exclaimed, pulling me into a light hug and air kissing both my cheeks. “It is so good to see you again! How are you this morning? Do you need any coffee? Water? Tea?” I searched my memory for her name, pulling it out just a moment before my pause would have become obvious. “Jessica! Good morning! Good to see you too. Thanks for the offer, but I think I may have already had too much caffeine. Perhaps later.” She laughed. “Of course. Just let me know when you would like it. Mr. Buddy is here already, but otherwise you are the only one.” This surprised me, as I had been told the workday started around eight in the morning, and it was already 8:05. I am quite diligent when it comes to timeliness in the workplace, and Jessica must have seen the confusion on my face. “Most people come around 8:30 or 9:00. Traffic. You’ll see. Now, let me show you where you can put your things, and give you a proper tour. I am sure yesterday was quite a lot.” She took my arm in hers and walked me through the doors leading out from reception, into a large open room with doors leading into separate glassed in offices. Her warmth and compassion were welcome in this strange place. Although I had been here yesterday and for my initial interview, the office still intimidated and perplexed me.

The Snail Gets Her First Splinter

In the main room, a large white leather sectional couch was situated in the center of the room. Glass end tables were placed on either side of the couch, with a lamp on one and a vase of flowers on another. There was a large, thick rug on the floor in vibrant primary colors suggesting a playfulness that the rest of the furniture did not. In one corner of the rug was a child’s small, circular, white plastic table surrounded by yellow plastic chairs with rounded safety edges. On the table lay laminated placemats printed with letters, shapes, and lines, along with plastic dishes and utensils in matching sets of pink, blue, yellow, and green. Containers of colored play dough sat in the center of the table along with a plastic rolling pin, cookie cutters, and miniature spatula. I remember thinking that it all looked as if we were waiting for a child to show up to prepare an imaginary meal. *Oh, but the carpet!* I worried to myself. *Have they never played playdough with small children?* Teaching is messy work, especially ecological education, and I wondered how the white couch and plush carpet would survive.

Jessica led me to the first office. It looked out onto a sliver of the creek, the water bright aquamarine under the cloudless blue sky. Two long tables ran down the center of the room and comfortable swivel chairs were spaced evenly around each table. There were empty shelves at either end of the room. “You can put your things anywhere you like. Let me show you the rest of the office,” Jessica replied. Her smile was patient and her eyes kind, which I desperately needed to settle my nerves and center my jetlagged mind. It felt good to connect with someone else. After I set my bag down, Jessica led me around to the rest of the offices. “All of the Senior Leaders will share the office with you, along with the Finance Manager, IT specialists, and the two PROs when they aren’t out running errands." I took note of the community feel and thought it was a good sign, as if they were expecting collaborative planning and spontaneous meetings over curriculum and instruction.

"This next office is empty, but it is used by the board members when they come to visit." I interrupted, "How often do they come to visit?" "Oh, it seems like every week at least one of them is here," Jessica replied. I was truly stunned, as I knew our board members were from all over the world. I ran my hand over one of the bookcases as I gave the room a last glance. "Ow!" I exclaimed, withdrawing my hand. A splinter. It was nothing huge but definitely large enough to send a ripple of pain through my finger with every move. This tiny sliver made me feel prickly and irritable, as did the idea of the board flying first class and being put up in the same hotel I was temporarily living in, at more than $300 US dollars per night. What does sustainability mean to the board? To the owners? How do their intentions and expectations match with my own? What did it say about the ecological integrity of the school?

Within ecological place-based education the idea of "greenwashing" often arises among those steeped in ecological theory and pedagogical training (Greenwood, 2010). Many of us worry at the way the terms sustainability, environment, and ecology are thrown around today in education, usually related to topics like recycling or plastic straws or playing outside. Whenever I meet people and explain what I do, their first reaction is to talk to me about the reusable straw they purchased or the lesson they taught on recycling. Greenwashing can be defined as "disinformation disseminated by an organization so as to present an environmentally responsible public image" (Greenwash, 2012), and more and more schools and universities are using the term to suggest that they are more sustainable than they really are. What was the case here? I pressed my thumbnail to my forefinger, extracting the splinter and pushing these thoughts to the back of my mind.

The Snail Gets an Economy Sedan and Maintains Integrity

Just as we arrived at the next office, the Head of Human Relations, who I affectionately thought of as Mama, arrived. She wore a white woolen skirt suit with a dark green silk top – a nod to the fact that it was "winter" in the region. Every piece of her hair was in place, and her makeup was flawlessly done. In two years, every time I saw her, she looked as put together. Mama greeted me like Jessica did, with a big hug and air kisses on each cheek in the manner customary to the region, and I returned the affection. The conundrum of being an ecological place-based educator who moves around from place to place, is the constant yearning to connect to a place, to the people around you, to understand the "genius of place" fully, and quickly. I have learned to be vulnerable, to say yes, and to live with *open-hearted connection* most would reserve for their best friends in their hometown. Mama made me feel at home, and I welcomed the connection and the kisses.

"Habibti, we are so glad you are here. I've sorted out your rental car for you, just as you asked – such a little car though. Why don't you want a big car, so you can be safer? Everyone drives big cars here. They are better. Maybe you will change your mind?" She looked at me hopefully and continued to rattle on. "I wish you'd change your mind – I could call them right now – but okay, it will arrive this afternoon so you can get around easier. Let me know if you need anything, habibti. I am here for you, anything you need." I thanked her and smiled at her kindness, while rolling my eyes inside my mind at her insistence in getting a larger car.

Most people in Desert City drive massive SUVs with four-wheel drive and over-sized tires. Either that, or expensive sports cars that they race up and down the main road late at night. In those early days, I was often told that the SUVs are necessary because everyone else drives an SUV. The rationale was that you didn't want to be the small car in the middle of all the big cars; someone might drive right over you, accidentally squash you like a bug as you drive to work. In my short time here, I have already heard horror stories from taxi drivers of tiny hatchbacks being driven off the road by massive over-landers in a hurry to go…where? Besides, gasoline is cheap here…so the rationale goes. I was also told, by Mama, of course, that someone of my status should have a big car, to show the world I meant business. "You can afford it, why not?" she added, not knowing I have always driven gas efficient economy sedans as a matter of principle. The place where the splinter had been throbbed a bit.

The rest of the office was more of the same: shining silver frames, expensive desk chairs, clear glass windows with views in every direction. As people began to filter in, Jessica and another woman, Frannie, delivered Turkish coffee or English milky tea and biscuits to each new arrival. They picked up empty glasses and wiped away spilled crumbs from morning snacks. Their high heels clacked around noisily as they rushed from one office to another fulfill one request or another, and the din in the office rose from a quiet hum to a gentle buzz. Everyone was dressed to the nines in pressed suits and shining shoes. As a thrifty environmentalist and outdoor educator to my core, I found myself questioning the opulence, the shine and glitter, of it all, wondering how this –

offices in high towers, business suits and high heels, office “boys and girls” (who are actually men and women) – fit into what we are supposedly trying to create. In this moment I felt a distinct discomfort caused by the juxtaposition of my *hopeful vision* of a school dedicated to sustainability and the lived reality of designer shoes and gas guzzling cars.

~ The Snail Takes Advice from a Plant~

I knocked lightly on the principal Buddy’s door and peeked in. The room was dark and dusty compared to rest of the office. Unlike the other offices, the lights did not automatically turn on when I entered. Buddy was nowhere to be found, but his navy blazer hung over the back of his chair. Dust swirled through the air, twinkling in the thin strips of light that filtered through the drawn blinds. A cup of tea sat steaming on the desk, the teabag still steeping in the milky water. I brushed a bit of dust off an empty chair and tentatively took a seat. *Where was Buddy?* I wondered. As the head of school, Buddy was a gentle leader with a mindful and deliberate demeaner. Like me, he had founded several schools in other places, and he was often full of restless energy, playing with a pen or rearranging items on his desk. Today I was unsettled by the stillness of his office. “He’s just been pulled into a meeting. I’m sure he’ll be right back,” Jessica said as she passed by the office door, as if reading my mind. I noticed a small potted pothos ivy in the corner, and I reached out to remove a few dead leaves and wipe away the dust from the living ones. At my touch the plant seemed to perk up, its heart shaped leaves shaking gently in my direction as I pulled my hand away.

While I waited for Buddy to return, I looked around the office. There, on the corkboard above his computers, was a piece of paper with the United Nations Sustainable

Development Goals (UNSDGs) outlined in colorful numbers squares. The UNSDGs were meant to be kept at the forefront of our work at Desert School. Our mission was to bring these goals to life through our school, our curriculum, and our work, every day. I envisioned a *holistic curriculum*, interweaving science, mindfulness, and play, among other topics. *Perhaps we would bring in elders from the community or draw on the many tales of the Bedouin who have lived here for generations*, I thought to myself. As I stared at the paper, the pins holding it in place suddenly fell from the corkboard, and the paper fluttered to the ground like a leaf dropped from a tree. I reached down to pick it up and held it to the window for a better look.

On the back in tiny handwriting was my name and a series of notes. It read:

Emily:

- the real driver; eco and sustainability expertise
- holds other leaders accountable; support teachers in carrying out mission
- FOSTER ECOLITERACY IN ALL – long term goal.
- Run CPD – 60 hours for ecoliteracy (pending board approval)
- On-boarding training: PBL, PBE, MISSION, HOW TO, ECOLITERACY PRIMER, etc., etc., etc.

None of this was particularly surprising, and in fact was exactly what I was looking forward to. I intended to create a loving community of inspired ecological educators bringing our vision of sustainability to life. The notes continued.

Short-term goals:

- Ecoliteracy Standards – what are they? MAKE THEM.
- Define:
    - What does ecoliteracy mean for our students?
    - How will we know when they are ecoliterate?
    - How will we measure their ecoliteracy?
    - What will be expected of our teachers with regards to ecoliteracy?

Well, that *depends on what we choose to prioritize as a* team, I thought to myself. I felt a bit like these notes sounded like a one-woman show. “Sustainability is a community practice" is a common refrain among ecological educators (Stone & Barlow, 2005, p. 3), one that I sing often. More importantly, the most robust models of ecological education are led collectively, not by a single person, but rather through an integrated, community made up of members across a wide spectrum within an institution (Ferreira, Ryan, & Tilbury, 2007; Kensler & Uline, 2017). I assumed the others would get involved when they arrived, and we would discuss priorities, values, and long-term goals as a team. *Really now*, I thought, *where was Buddy? And who's notes are these?* They continued.

Standards and Frameworks:
- International Primary Curriculum (IPC) - scaffolding for projects
- English National Curriculum (ENC) - foundational set of standards; student assessments; Literacy and Numeracy!!!
- Regional Educational Governing Body inspection framework – OUTSTANDING RATING ONLY ACCEPTABLE RATING!

Even though I had been informed that no school had ever achieved an outstanding in their first inspection, Desert School seemed to be aiming high.

Something bumped into my heels, and I turned around in surprise. A pile of books, pamphlets, and bound papers were stacked on the floor at my feet. I looked around, but the only other living thing in the room was the ivy in the corner. *Was it always that big?* I thought. The plant seemed to have grown in size, and the leaves still shook as if something had recently brushed up against them. Looking back at the stack of books, I saw it was a complete collection of the English National Curriculum (ENC) standards from early years through grade ten, as well as printed and bound copies of section of the International Primary Curriculum (IPC).

As I continued to wait for Buddy, I flipped through stack of books. There was nothing too surprising about the ENC; they are a set of rather indefatigable learning standards outlining the statutory knowledge and skills to be taught across different subjects for different grade levels. While there was a history of trying to bring sustainability and environmental education into the ENC, a full integration had never actually happened, due at least in part to an incompatibility of aims (Chatzifotiou, 2002, 2006). The ENC, in its many iterations, had long been focused on building students "basic skills" of literacy, numeracy, and information technology. Sustainability education, which requires not only the development of knowledge, but also environmental behaviors and values, can be described as a poor match with the ENC (Chatzifotiou, 2002; Chawla, 1999; Hungerford & Volk, 1990). The IPC, likewise, was not robust or holistic enough to me given the mission and vision of the school. I would have to rewrite most of the projects to ensure they complemented and carried forward our unique ecological vision and to make room to support open-ended inquiry and place-based education. I knew I would have to treat these frameworks as a starting point. A launching pad.

I thought of the board and the teachers trying to wrap their head around the potential of place and project-based learning. It could be overwhelming. From experience, I knew some people would not fully understand what we were trying to create until we actual did it, so we need to help them along the way (Sobel, 2005). I knew I would not only have to be *imaginative* but also *diligent* in designing and implementing this curriculum in a way that felt both visionary and familiar (Demarest, 2015). I would need to learn the ENC inside and out, across the standards. I would have to familiarize myself with their tests and evaluations so that I could help teachers plan backwards from there without compromising the heart to the head (Orr, 1992). I had expected that this school, given its stated commitment to ecological, place-based education *through* project-based learning, would feel freer and “artsy,” as one teacher would later put it. I looked at the pile of standards and frameworks in front of me. That splinter from earlier felt tiny compared to the huge learning curve in front of me.

A movement in my peripheral vision caught my attention, and I turned my head. As I did, the ivy in the corner slowly crawled along the floor, then up the leg of the desk, unfurling leaf after leaf after leaf, coming to a stop just as it reached a pile of folders stacked neatly on Buddy’s desk. I looked away in disbelief, then turned back as the folders slid to the ground one by one, falling open not unlike the ivy leaves just a minute ago. Not wanting Buddy to come back to a mess, I bent to pick up the folders, glancing at each one as I closed it and stacked it on the desk. The teacher hires for the coming year. All of them so qualified for a British school, but not a single one with experience in sustainability, science, or ecological education. I shook my head and looked back at the notes on the back of the UNSDGs. There is was, at the bottom of the page, scratched in as if an afterthought; the handwriting almost looked like my own.

RE: teachers – Emily must:

- Train in sustainability, instill sense of ecological literacy
- Ensure ecoliteracy is reflected in EVERY LESSON, EVERY TASK
- SLT need training, too

Sitting in Buddy’s dark office, I tried hard not to panic. This was one of the most daunting moments for me, and I had to call on my reserves of self-efficacy to remind myself I was capable, intelligent, and uniquely qualified for this. The ivy continued to grow up the wall and across the ceiling at an unbelievable rate, seeming to surge forward with each frantic beat of my heart. *What in the world was going on? How could they think this was a good idea, to start an ecological school without ecologically minded educators?* I wondered to myself with growing frustration. In the months to come, I would talk with sustainability colleagues throughout the city, and find that they were as perplexed as me by this hiring decision. As Billy, a woman I would come to rely on as a peer during my time in Desert City put it, to do ecological education well, you need to surround yourself with people who were ecologically knowledgeable, as well as enthusiastic and willing to take risks.

These teachers may be enthusiastic, and clearly, they were risk takers of some sort if they were willing to join a new school, but was their knowledge of sustainability and ecological systems enough to bring our mission to life? I recalled someone telling me that Desert School had focused on recruiting and hiring teachers who know the English curriculum inside and out, who are experts of the grade level and who excel in the teaching of Maths and English, which are the focus of the National Curriculum. How would this impact the realization of our school intentions? What might it mean for teacher pedagogy and curriculum design for ecological literacy and place-based education? What would we be able to keep? And what might we have to set aside or discard? Ecological place-based education relies not only on the actual environment in which it is taught, but like any curricula, is heavily influence by the expertise and passion of the teacher carrying it out (Connelly & Clandinin, 1991; Demarest, 2015; Eisner, 1992; Sobel, 2005).

The ivy covered most of the ceiling now as new tendrils quickly rooted down and sent out side-shoots. The growing edge kept pushing forward, and I found myself growing unsettled, anxious. Buddy’s tea had long grown cold, and he didn’t seem to be coming back any time soon. I could either wait here in my growing panic, or I could get to work on my own. As if in response, a few leaves dropped suddenly from the ivy and, pushed by an imperceptible breeze, landed back in the hallway just outside the office door.

The Snails Considers Compromise

In his study of the process of starting a new charter school, Hodgkinson's (2011) findings led him to examine the role of compromise in a startup school. He writes, "Give and take is a natural part of the change process. Berman and McLaughlin (1978) first illustrated this fact when they coined the term 'mutual adaptation' to describe how *both reforms and reform participants are changed* during the implementation of educational innovations" (Hodgkinson, 2011, p. 215, emphasis in original). In Hodgkinson's study, compromise came in the form of changes in approaches to marketing, to priorities, and curriculum development. In the early days of Desert School, I found myself contemplating how I might have to compromise my own intentions and beliefs in order to meet the school "where they were." Given this was my approach to place-based education, to start where you are (Sobel, 2005), I realized early on that this might be the only way forward, meaning even meeting the other leaders where they were, which seemed to be quite a ways behind me. This would mean even slower progress than I thought, but it was possible. I suppose optimism and imagination go hand in hand.

At the same time, I was truly perplexed, and bit shaken up at the way the situation clashed against my *hopeful vision* of creating specialized, progressive schools with an ecological focus. I drew on my experience to make sense of my anxiety towards Desert School's approach to hiring and curriculum design: When I started a project-based charter school, we were all trained extensively in PBL; when I moved to a school with an emergent learning approach, the hiring process specifically sought out teachers with expertise and passion for this way of teaching and learning. Here I was left to wonder: What is our focus: developing ecoliterate children or delivering maths and English curricula? What do we value: our future world or future test scores? Like in many schools, there didn't seem to be time, or the intention, to "step back and reflect on the challenging questions like the purpose of schooling," even when setting up a visionary ecological school (Kensler & Uline, 2017, p. 22). I remembered the work of Hodgkinson (2011) examining the process of starting a sustainability school. Two of his themes were constraint and compromise, and he linked these to the complex nature of sustainability as an idea and process. What would have to be set on the back burner? What would need to be emphasized? I had expected this to be a work in progress, and this instance exemplified the messy, *responsive action* I knew would be critical to employ in my role in this new ecological school.

Later that day, from my plush hotel room, I stared across at the school office tower. The contradictions and inconsistencies of the last two days looked even more stark. How do shining glass towers and five-star hotels mesh with our school mission: creating an education for today that ensures enough for all, forever. I thought about the newly purchased dress clothes packed in my suitcase and how different they were from what I usually wore in the classroom or out in the field. *Sure, my blazers looked sharp*, I thought, *but they are still uncomfortable and unfamiliar*. I struggled to imagine how I would build a learning garden in dress slacks and high heels.

~The Snails Learns About Her Responsibilities~

Early in my second week at Desert School, I was informed that I needed to report to the boardroom for an important informational meeting. I cleared my schedule and made my way over to the sunlit corner office reserved for interviews, board meetings, and other highbrow events. The room sparkled and shone as the midday desert sun streamed through the windows. A large glass table was surrounded by highbacked black chairs, and a bottle of chilled sparkling water sat at each place. A man dressed in all white sat at the head of the table. Dark sunglasses covered his eyes. A large chameleon perched on the man's shoulder, its skin dull olive green against the man's pristine jacket.

"Come in," the man said, gesturing to a chair near the door. The chameleon's eyes darted quickly towards me, moving up and down and then all around the room, scanning for secrets and danger. The man did not remove his sunglasses as he began to speak.

"Good morning, well, almost afternoon, I suppose," he began, his voice having a quietly rushed quality to it, as if each word was gently pushing the next word in his mind down a slide and out into the world. "I wanted to speak to you today about our expectations for you, now that you are here, before you really get started." "Good. That's great. I'm still wrapping my head around my role," I began, but the man silenced me by holding up a hand. The chameleon twitched nervously, and a hint of yellow crept across its face, flushing along its back and around the curlicue of its tail.

"So, first: your role. You are here to bring ecoliteracy to life for this school. I see this happening in three ways. Do you mind if I write on the board while I talk?" he asked. I shook my head, and the man gently stroked the chameleon's back. The chameleon opened its mouth and the man pulled a marker out from between its lips. The chameleon flashed from yellow to pink in the blink of an eye. "Good," he said with a curt nod, taking the marker and moving around the room to a large whiteboard.

"One," he started, writing the number on the board and circling it. "You bring the mission to life through the curriculum. By this I mean the ecological learning and place-based approach promised to our parents, students, and of course the regional governing board. As you know, human activities are seriously impacting global climate, threatening not only ecosystems, but also societies and economies around the world, leading to an increase of hardships on every continent and on generations to come. A contemporary ethic based on compassion and responsibility towards both the human and non-human world is needed now more than ever. It is this higher ethical sense that we aim to instill in our students. This is what sets us apart. We will leave it to you to figure out how that happens." The chameleon turned from pink to purple to blue as the man scribbled on the board.

I said nothing, awed by both the chameleon and the fact that he would "leave it to me" to figure out. This was not the *holistic*, community-oriented approach to education I expected. He continued to speak, writing and circling the number two on the whiteboard, as his own jacket began to change colors. "Your second role: overseeing the artist and scientist in residence. Focus on the artist first, but I also want you to really think deeply about what you envision here. How will the artist and scientist draw out students' and teachers' imaginations? Take some time with that. It is perhaps the least pressing but the most exciting." The chameleon's eyes moved around the room, but the man in his sunglasses seemed to be staring straight at me. His jacket was now the same shade of magenta as the chameleon, as were his skin and teeth. I looked out the boardroom window. The sky was a perfectly normal shade of blue, and the sun reflected off the glassy buildings with a golden hue. I watched the workers in the office across the street for a moment as they went about collecting their papers from the copier and answering phones. Seeing nothing out of place, I turned back to the man and the pet on his sleeve. I noticed the man and his lizard were slowly turning from magenta to orange to yellow. I did my best not to react with alarm.

“Okay…” the man said, turning his face from me to the whiteboard. “Three: the ecodomes and gardens. Now, the ecodomes will be perhaps the most innovative spaces on the campus, and the gardens are pivotal to the image we are trying to project.” “Yes!” I exclaimed. “I am so excited to hear about them. So, what’s the plan for each of the domes?” I asked eagerly, assuming these plans were well underway by this point. The man cocked his head to one side and furrowed his brow behind his dark glasses. “Well, you see, we don’t have a plan. That is for you to decide. Just make it look good, something to wow them, you know? Do what you have to in order to draw in the families and brings in the numbers, to show them we are in touch with nature. I’m sure you will know what to do. That’s why we pay you the big bucks, as they say in America. It’s not so much what we *do* as it is about how it *looks* to the public.”

I flinched and bit my lip to keep from responding. For a moment, the entire room was washed in green as the chameleon opened its mouth in a lazy yawn. The man held out the marker to the lizard, and in one gulp the chameleon had swallowed the maker whole. The man glanced down at his watch, then back up at me with invisible eyes, saying he had a flight to catch. He whispered something to the chameleon, and the animal squeezed its eyes shut and changed back to a dull olive green. The man’s jacket was once again pearly white, and his skin showed no sign of coloration. He pushed his chair back sharply and stood up. The chameleon plucked a set of car keys from the air with its tail and handed them to the man. Together, they rushed out the door without another word.

I left the boardroom and walked past Mama's office. "How was the informational meeting, my dear?" she called out. Unsure of how to respond, I replied, "It was…strange. Not at all what I expected." Mama laughed and nodded "Yes. Sometimes it takes a while to really see the true colors of any person or situation. You'll figure it out, habibti. You have a brilliant imagination," she said reassuringly. In reality, my head felt like it was spinning as I thought of the man and the chameleon color shifting just a moment ago. *They'll leave it to me? That's for you to decide?* What did he mean by that, and who were "they" anyway? I had expected a bit more collaboration and critique. I was a thorough believer in the idea that "sustainability is a community practice" (Stone & Barlow, 2005). Through numerous projects and trials, Ferreira et al., (2007) came to offer a multilateral "mainstreaming" approach to sustainability education. While it is recognized to be "very time and labor intensive" and "requires ongoing commitment across a range of institutional settings" (p. 237), this mainstreaming model offering "improved scope and longevity of change" for schools looking to implement sustainability education. My interview and subsequent conversations had led me to believe that this process – from hiring to curriculum development to school design – would be a *holistic* and integrated approach. Here I was being told it would be "left to me," not quite the community but a singular individual within the ecosystem.

The Snail Works Really Hard

From the beginning I knew this would be hard work. I knew we'd be making it up as we went along and learning on the fly. We were doing something entirely different, and this is what inspired my *hopeful vision* for the school. But a hopeful vision isn't achieved without action. When I interviewed the other participants about their intentions and expectations for their role in a new ecological school, the theme of *responsive action* – a combined expectation of hard work and intention of continuous learning – emerged from all participants. Starting a new school takes time, energy, heart, and patience (Hodgkinson, 2013; Tubin, 2009), and Desert School was no different. And yet, I had never been more tired in my life. One journal entry reads, "I want to pretend that I am caught up, that this notebook is filled with my stories over the last few months, but it's not. Instead, it's a haphazard smattering of moments that I made the time to sit, to write." My work diary showed list after list after list, and I pieced together memories from these and the numerous sticky notes, copies, and jottings tucked in among the lists.

March, April, May, June, July…The months flew by as we prepared the school for opening. My curriculum priorities were often pushed to the side during this time, as I met with parents and students, landscape architects, and spent an inordinate amount of time getting a recycling contract in place for the school. I got to know different members of our community including many local organizations and environmental experts. I used this newfound knowledge to support place-based curriculum design, imagining specific projects inspired by what I learned about the local landscape, organizations, and people. One note reads, "Met a lovely Irish family and sons covered in freckles." Over several meetings, I got to know this family better. One of their sons was a young boy already quite ecoliterate and enthusiastic about plants. I designed a project with him in mind. In this project students would explore the gardens and ecodomes while researching, designing, and illustrating a Desert School Field Guide to Plants. In many ways my artistic judgment – the senses “in which teaching can be considered an art” (Eisner, 2002a, p. 154) – was on display, as I *imaginatively and diligently* planned and designed in *responding* to what my audience needed, while also recognizing the need to let some things emerge *spontaneously*, with time.

Often, I spent my days with my head down at my computer, pouring over documents from the IPC, ENC, and the Regional Governing Board, looking for redundancies and non-negotiables that would need to be integrated into our taught projects. My notes reflect the fragmentation I felt, and I recognize now that in these moments I was preparing for creative work (Csikszentmihalyi, 2013; Kaufman & Gregoire, 2015; Wallas, 2014), taking in everything I could read and watch about ecological education. I returned to my favorite sustainability and ecological education books and articles*: Earth In Mind, Smart By Nature, and Childhood and Nature*, searching for patterns and overlap with the previous documents.

A sampling of my notes read:

> “Ecolit questions:
> How is it sitting in the curriculum?
> What does it look like in different year groups?
> Ex. What is an EYFS kid doing vs. Year 5. Role of the ecodomes?”
>
> And: “To present at staff meeting – 5 Strands, Draft
> Eco Know – know/understand
> Curiosity&wonder – play/create
> Eco minded/mindful – observe/imagine
> Sense of place – explore/connect
> Env. Just & Stewardship – act????
>
> And: “How do we want ecolit and values id’ed in LPs,
> What impact is it having and how will we know?”

As I wrote and sketched and highlighted, the shadow of a more complete vision for our curriculum and school began to emerge, but when I tried to look it directly in the eye, it vanished around corners and under desks. My notes from this time reflect one of the bigger thorns found among the blossoms of ecological place-based education at Desert School. Despite my *imaginative diligence*, I couldn't help but feel a sense of organization ecological *disintegration* as I worked through my ideas of a creative ecoliteracy framework – something for the teachers to use to guide their planning and stimulate their curiosity towards ecological teaching. Ecological integrity can be thought of as a measure of the health of an environment and how well all its parts support and challenge one another for the well-being of the whole community. I was ironically lonely as I crafted a curriculum built on community and interdependent relationships. With no one to discuss the ideas with, given their lack of time, interest, or expertise, I was often quite alone in this process, like a farmer readying her field for planting in the middle of the night. In the midst of the hustle and interruptions, it often felt like my vision for the school lay just beyond my reach, somewhere beyond the realm of reality where enrollment numbers and fiscal bottom lines were no longer the authoritarian rulers. I often asked for feedback on my work, looking for opportunities to engage my peers in critique and community building, but rarely did they have the time. One member of the SLT, responsible for overseeing the implementation and evaluation of the English National Curriculum in particular, took to saying that I "did all the stuff" that they "didn't understand a thing about," and used this as a reason not to engage in dialogue about ecological place-based education.

Between May and June, after months of research and preparation, followed by a forced period of incubation (Wallas, 2014), I fleshed my ideas out into a full-fledged Desert School ecoliteracy framework and set of English National Curriculum "aligned" projects. This flurry of productivity involved lots of colored markers and the constant flipping of pages, followed by frantic typing. Csikszentmihalyi (2013) refers to this stage of creativity as “elaboration,” writing that “it is probably the one that takes up the most time and involves the hardest work” (2013, p. 80). After months of preparation (Csikszentmihalyi, 2013; Wallas, 2014), it was as if the ideas couldn’t get out of my head fast enough. I relished the days when I was the only one in the office so that I could spread out my color-coded notes and see the whole picture all at once, only to rearrange and reorganize bits and pieces as inspiration or clarity found me. The process was cyclical: lay out a bit, reflect on it, then evaluate how it fits in – if at all – with the other bits (Csikszentmihalyi, 2013).

By mid-July the first iteration of the ecoliteracy framework was complete, and I had the entire curriculum designed and organized around key ideas in ecological education (Appendix D). I even included activity ideas and suggestions to support place-based learning such as “trip to the mangroves” or “visit Hidden Valley Aquarium and speak with head veterinarian,” experiences and expert connections I had personally vetted in my free time. The curriculum was ready for review and critique by the Head of Primary, who was responsible for ensuring the full alignment of the English National Curriculum. Unfortunately, this never happened as our focus turned swiftly from curriculum development to teacher onboarding as the start of the school year crept closer, and we started running out of time.

~The Snail’s World Is About to Change~

The Snail Interprets Unambiguously: In the following sections, I provided both a look at the literal surroundings of Desert City – high rise building, miles upon miles of asphalt and concrete, speeding SUVs and constant construction – while also describing, through creative representation, the feeling of those few months right before the opening of the school. Magical realist elements are woven throughout The Snail sections most of the time from here on out. As the start of the school year drew closer, we were all more frequently pulled away from our leadership roles, taken down side streets and on unexpected detours without reason or warning. Like the chameleon on the man's shoulder, colors shifted from moment to moment, and as senior leaders we often weren't sure what we were walking into on any given morning. Many of our original plans had to be spontaneously recreated when construction deadlines weren't met, and student numbers didn't come in as planned. The board members, usually calm and thoughtful, showed signs of panic, perhaps because of the outpouring of money without a reciprocal inpouring of students; we only had half the projected number of students enrolled as we edged closer to the start of the year.

Increasingly we were left without the resources we needed and told to figure it out. Hodgkinson (2011) described a similar situation in the school he studied, explaining the effect of the constraints of time, resources, and public conception of sustainability. As he described their situation (2011, p. 196):

> From the beginning of my study, it was obvious that the founding members of True Leaves felt the pressures of time in their attempt to open their new school. In one of my first phone interviews with Diana, she confessed: 'The problem right now is that everything is a priority.' And on several occasions afterward, Diana expressed her awareness of her 'shrinking time frame' and her need for 'a bit more time.'

Often, I found myself saying similar things and feeling the same way: "Everything was a priority!" It was not uncommon to work sixteen-hour days or be given large projects with next day turn around expected; others who have started new schools or business likely find familiarity in this fast, demanding pace. Nonetheless we kept barreling forward, even in the moments when it felt like the wheels had come off. Hoping for a breakdown – an opportunity to take a breath, think things through while calling for help – was perhaps the best we could do.

~The Snail Goes for a Drive~

The weeks rushed on, and the start of the school year drew closer. Late one afternoon, I heard a tap on the glass wall behind me and looked up. I was surprised at the disarray in front of me, as if a storm had hit the office while I was busy at work. My desk was covered with papers, markers of every color were scattered about, at least six different books lay open, and two cups of tea sat cold in front of me. I turned around. Buddy stood at the doorway, jingling his keys. I hadn't seen him in weeks, and he looked as tired as I felt. "It's late. Past time to go. But we've been working so hard, and I need to get outside. I was thinking we can go see the school site and have a look around. You haven't been there yet, and I want to see what progress they've made. What do you say? Care to go for a drive? Clear our heads?"

Like me, Buddy drove a smaller car, a nod to his commitment to the school's vision. As we drove away from the downtown and the shining office tower, I looked out the window. SUVs and sports cars sped past, weaving in and out of traffic without signaling. Cargo trucks carrying construction materials lumbered along in the right-hand lane, blowing their horn anytime someone dared to cut in. An open bed delivery truck carrying a load of watermelons merged into our lane, and I couldn't help but imagine the comedy and chaos of a thousand green globes spilling out across traffic, splatting pink and red and chartreuse as they bounced onto the pavement. Where did they all come from? I wondered, still seeking to know more this desert landscape as my own.

We took an exit and found ourselves looping and looping, the road circling one way then careening back in the opposite direction like an amusement park ride. The GPS unit showed our circuit to be in a sideways figure 8, and I wondered if we were actually heading somewhere or stuck in some concrete infinity. I laughed to myself, recalling a joke a taxi driver told me the first time I visited Desert City. “The roads in this city circle around and around, you know why?” he had asked. “Because Allah is infinite and also has a great sense of humor.” He had chuckled to himself and glanced back at me in the rearview mirror. “It is true and also funny. Laughing keeps me sane in the midst of all these crazy drivers.”

Buddy turned on the blinker to signal his intention to exit five hundred meters in advance. Drivers sped past without a second glance. Patiently checking his mirrors, Buddy waited. Three hundred meters. The lane to our right merged with ours, and suddenly we were no longer in the exit lane. The turn signal blinked steadily. Buddy glanced in the rearview. “Even driving is a competition here,” he said under his breath. Without warning a large white SUV swerved across five lanes of traffic, heading straight towards us in an attempt to make the exit. Buddy slammed on the brakes, and the tires screeched. I braced my arms against the dash and the door and reflexively squeezed my eyes shut, waiting for impact. Our car veered left then right, and I felt the backend begin to fishtail, and then we were spinning. Horns blared around us, and I heard the screeching of rubber against asphalt. I thought of all the wrecks I had seen in my short time here, three already, and all disastrous, and I kept my eyes shut. Buddy said nothing, and I saw nothing, but I could feel his concentration and commitment to guiding us through this moment. Traffic sounds seemed to fade away, and the spinning stopped. Buddy had regained control of the car, and we were moving forward again. I peeked my eyes open and saw a construction barricade flash by, then a string of orange flagging. I looked up and saw an overhead road sign covered in burlap that flapped in the wind. It read:

HAPPINESS STREET

UNDER CONSTRUCTION

Despite the warning, we continued forward. We had no other choice. Like so many roads in this city, a missed turn meant driving blindly until the next opportunity presents itself. In a construction zone like this with stone barriers on either side, the next exit could be miles, if not hours, away with the only option to keep moving forward into the unknown.

After fifteen minutes, we were still barreling down the same road, only now the perfectly smooth asphalt gave way to packed gravel and sand drifts. “I think I know where we are,” Buddy said. “The school site isn’t actually too far away now.” I struggled to believe him, but I had also come to expect the impossible in this city: ski slopes in the desert, buildings that touched the upper atmosphere, fresh water from salt. I noticed faint lights in the distance, way off across the dunes, and I latched onto Buddy’s optimism. “That’s it?” I asked. Buddy nodded slightly, “I think so. You’ll know it when you see it. Ironically, for an ecological school, they sure like to leave all the lights burning.” I shook my head silently; just another way policy and practice failed to match up with our intentions.

As we continued to drive, the sun began to set, and the sky was streaked with neon oranges and pinks behind a smattering of silver lined clouds. Out here, away from the city lights, the first stars appear not one by one, but as handfuls of glitter tossed skyward by a child. The car hit a pothole, and I bounced high in my seat despite my seatbelt. Buddy cringed and gripped the steering wheel. There was another bump. Then a vibration, followed by a flapping noise. Chup, chup, chup…chuuuup…chuuuuup. Buddy brought the car to a stop, and the chupping ceased as well. Fifty years of driving experience between us, and we both knew what that sound meant without looking.

Out of the car and into the desert night, we moved to the back of the vehicle. Buddy put his hand to his head as he said, "There's no spare tire. It's at the shop being fixed." It didn't matter though, as a glance at the wheel showed a bend in the rim so extreme as to rule out driving even if we had a replacement. At the same moment, we both looked at our phones. No service. Of course. "I'll go for help, or at least walk back the way we came for a bit until I get coverage," Buddy offered. "You stay here until I come back. If I can get a hold of them, I am sure the board can send someone out soon enough." I thought of the color-changing man and his chameleon and wondered if we wanted that sort of help. "There are some biscuits and water in the back if you get peckish. And a torch and some other bits and bobs in the glove box you might find useful if you get bored. I'm sure I won't be long."

The Snail Reflects on Ecological Integrity

I sat in the back of the car with the hatch open, legs dangling towards the ground. Buddy walked off into the night back down the road we had just traveled. I looked up at the sky again, now studded with stars. I realized a full moon would rise that night, and I enjoyed the darkness for a moment. I never expected to end up in this desert city, surrounded by lights and cars and oil and money. So much about this place was a direct contradiction to my deepest held beliefs: that we belong to the world and not the other way around, that nature is the greatest teacher, that life is better lived in slow motion, moving only as fast as my two strong legs can carry me. Already the juxtaposition of my beliefs and the outward expression of the values of this place were beginning to spar with one another. As I sat and watched, I thought about that Desert School Tower Office. I cringed to think of the money and carbon being burnt in the name of sustainability education. Even in these early days I found myself vacillating between wholehearted enthusiasm and secret disgust; I felt fragmented, the opposite of *the holistic, connected educator* I was striving to be (Orr, 1992). Moroye and Ingman describe ecological integrity as the meeting place of actions and beliefs and a characteristic of ecologically minded educators (2013). So much of my life up until this point was a reflection of this dimension of my own ecological mindedness (Moroye, 2007, 2009). Now, I had to remind myself that even my own paycheck was funded by oil money. Only days ago, at a meeting we were reminded several times that the school was first and foremost a business, that numbers and outcome were the focus as we established ourselves as a school. This too was in opposition to my belief that ecological education is a process as much as a product and my expectation that – to do this well and right – would be a slow and steady journey with ups and downs and unexpected surprises that could not be predicted by market indicators. Talking with peers in similar situations, I learned that it took them *years…*three, five, seven…before they started to see the impact of their work, *and they were okay with that.* The aims of business and capitalism are rarely the same as the aims of ecological and sustainability education (Greenwood, 2010). Like my peers, I explained away my discomfort by telling myself that of all the places ecoliteracy was needed, perhaps it was needed here most, but maybe this was my own way of greenwashing myself to do what I came to do (Greenwood, 2010). How could I keep my own *hopeful vision* in sight – to nurture a loving and passionate education community, driven by ecological principles in thought and action – with all the other forces knocking about? Could creativity and compassion win out over pride and money?

~The Snail Follows Her Vision into the Dark~

My feet throbbed as they hung below me, bringing me out of my thoughts and back into the night. I realized that I still wore my dress shoes: sensible nude heels with a rounded toe, but even so I was hurting. I hobbled up to the front and grabbed the running shoes and socks I had taken from my own car before leaving the office garage. I stepped out of my heels and pulled on one sock and shoe then the other before bending down to tie my laces.

A yip and a growl sounded not too far away, and I jerked upright, searching the dunescape for the source of the sound. A flash of movement to my right grabbed my attention. Looking into blue night, I saw a bit of white and green, almost turquoise, twinkling in the distance. Again, there was a yip, then a howl; less a growl, I realized, than the come-find-me bark of a pup. Grabbing my work bag, I stuffed in a bottle of water and some of the biscuits from the trunk. I grabbed the flashlight and the small bag of “bits and bobs” from the glove compartment. Ever the curious scientist, I started off across the dunes, listening to the night, peering out across the dark horizon.

Yip, growl. There it was again, and the same flash of light. Two spots this time – eyes in the darkness looking back at me, then leaping ahead. I could just barely make out the silhouette of a canid. A fox? I wondered. But the ears flopped down like flaps of cloth instead of standing upright, and it was much larger than the local red fox that lives in the local area. A wolf! I thought, but quickly realized the Arabian wolf had been all but extirpated from this part of the peninsula. A dog then? I'd heard of people abandoning dogs out in the desert when they decided they were no longer able or willing to care for them. Stories of entire villas being found overrun with deserted dogs or bags of unwanted puppies being left on the side of the road circled through my mind, and I picked up the pace.

The yips turned into full-fledged barks, and I realized I was not tracking a puppy, but a grown dog. I started to feel a bit more wary, and yet I couldn't stop my feet from moving forward. My shoes filled with sand, and I worked up a sweat in the cool night air. I took off my navy-blue blazer and marched along with it tucked under my arm, then later tied around my waist. How long I walked like this, I can't remember now, but I know that when the moon rose behind me, and I finally took my eyes off of the creature I was following, I was nowhere I'd ever been before. Sand dunes stretched in every direction, and the luminous oranges and pinks of sunset had been exchanged for gunmetal gray and cool silver in the moonlight.

I looked back in the direction I thought I had come from, but my footprints had already been blown away. I watched the evening wind dance up and down the dunes, taking on the shape of a herd of oryx racing across the land and up to the moon. I turned my gaze towards the animal I was following, but it was gone, nowhere to be seen. The lights in the distance were closer but still a long way off. I knew that it would be smarter to hunker down for the night than to keep wandering without a waypoint. I saw a giant ghaf tree not too far away, and stomped my way across the sand, settling into a nook in the base of the trunk. Long branches dropped down and wrapped around me, and I rested in the arms of the tree. In this symbol of resilience and community in the desert, I felt comforted. The sensation of endless motion, movement, and growth filled the night, and it was impossible to tell what was real and what imagined. I had the sense of being pushed, pulled, then finally held in place by the land around me, nested within the idea of something much larger than myself. The comforting feeling of swaying trees and climbing vines faded away slowly as morning sunshine filtered through the leaves.

In the dawn light, I found a bundle of warmth curled up against my back. I turned slowly, and there she was: white and black-blue fur speckled and mixed, like paint splattered and smeared across a canvas. Her nose was tucked into her belly and her tail tucked under her nose. As I moved, she sat halfway up, crossed one paw over the other, and looked at me with her crazy eyes. When I say crazy, I mean wild, peculiar, singular eyes: one blue ice, the other gentle brown, looking at her face was like seeing two dogs in one. She wagged her tail at me with some hesitation and licked her muzzle with a pink tongue. She blinked her bi-colored eyes and looked directly into mine. “Hello, beautiful,” I said quietly, reaching out a hand slowly, then gently placing it onto the nape of her neck. “You are nuts, you know. Leading me all the way out here. Where’d you come from, good girl? And where are you going? Who are you, crazy dog?” In response, she barked happily, scooted forward on her front legs, and licked my face once before looking away into the desert.

I crouched out from beneath the branches of the ghaf and stood up to stretch. I walked to the top of the nearest dune and looked around. Nothing but sand. No sign of the car either. Squinting my eyes, I made out the faintest outline of…what? A building? A house? A fortress? I could see greenery which hinted at water, and something moved slowly across the land. Suddenly, the wild-eyed dog started barking furiously and running in circles in the sand. She sprinted off in the direction of the compound, then stopped and darted back to my side, repeating the barking and the full speed chase once more. She reminded me of myself over the last few months at work, preparing for the start of the school year, running forwards and backwards. “Girl, you are crazy, La Loca, Locura, Locura,” I said, the Spanish word for crazy madness suddenly tumbling from my memory. The dog barked at this. “Okay. La Locura. You like it?” She barked again and leapt to her feet. “Lalo for short, if that suits you,” I suggested, as if she could contradict me. Again, with the barking, and then she nudged her head under my hand. As she did, I felt a swell of love come up in my chest and tears fill my eyes, without fully realizing why. Her paws firmly on the earth next to mine, the warmth of her head beneath my hand, and those eyes. For a moment I felt calm and grounded. I saw myself reflected in her eyes, and I understood that Lalo was as much my vision as my guide; she would help me bring the school mission to life. Suddenly I knew I would follow her anywhere. “Okay then. It’s you and me, Lalo. Where are you going to take me?” As if she understood my words, she blazed across the dunes, sand flying in tufts behind her. I retied my laces, stuffed my blazer into my pack, and tightened the straps around my shoulders. With one last glance behind me, I set off in a new direction, keeping Lalo in my sights.

~The Snail Ponders Ecological Communities~

The cool of the morning quickly burned off, and although it was considered winter in the region, the sun felt hot on my face. I wished for a hat or a scarf – anything to protect my skin and provide shade. Lalo continued at pace, running up and down the dunes. She was a funny dog, somehow full of hope, barking joyfully at birds as they flew by, chasing lizards across the sand. She was aware of my every move, stopping when I paused, nudging me forward when I grew tired. There was a gracefulness to her movements and her ability to stay connected to me even while far away. I tried my best to mirror her enthusiasm and keep up with her, but each step forward caused me to slide back a little as well. Grains of sand poured downhill, tiny silicate avalanches to unsuspecting beetles below. And yet I realized as I walked that my presence here was anything but unnoticed. Without doubt, from the sidewinder snakes to the jumping jerboa, my footsteps and smells had registered on sensory receptors I could only dream of having, and news of my every movement was being passed along communication channels my ears could not hear. Lalo and I ran for miles and miles, the orange dust creeping up my pant legs until they were no longer light grey but rust red from ankle to waist. I drank from the bottle of water I had taken from Buddy’s car, and I wondered how he was getting on, what he would think when he returned and realized I was not waiting where he left me. Would he think to send support? Or would he just assume this was part of my artistic process, running off into the desert, something to do with “exploring the local landscape” as research?

I looked at the sand beneath my feet, seeing the way each step cut through a thin layer in the surface of the dune. From growing up in the dunes of North America, I knew this thin layer to be a biological soil crust made up of microscopic bacteria, algae, and lichen. These tiny but critical members of any dunescape ecological community are pioneers, suppressing erosion and retaining moisture, creating pockets of stability and support in an otherwise harsh and shifting land (Thiet, Boerner, Nagy, & Jardine, 2005). Every step I took was leading me somewhere while also changing the desert landscape, if only in the smallest way. Without this structural integrity, what would hold the dunes in place? I watched sand swirl in one footprint as a gentle breeze blew, not wanting to imagine what would happen if this integrity was destroyed or a stronger wind kicked up.

~The Snail Illuminates Her Intentions~

Sometime in the afternoon, as the sun began to sink in the sky, Lalo and I neared the compound I had only squinted at this morning. On one side of the camp, there were clusters of date palms growing tall and green. Several had large yellow bunches of drupes still hanging down, unharvested. A small hut had been built out of a material I couldn't identify, and a fence had been constructed to corral the herd of camels that was lazing about. This must have been what I saw earlier, I thought, remembering the slow-moving creatures I'd spotted from far off. I looked over at Lalo, who looked back at me expectantly.

"Hello?" I called out, not wanting to startle anyone. At my voice the camels turned their heads in my direction, jaws slowly working on something. One camel, slightly larger than the rest, took a step in our direction. Lalo moved behind me, and I took a step backwards. I called out again, "Hello? Is anyone here? Hello?" The other camels started walking towards us, following their leader. Without warning the large one ran toward us in a clumsy but swift gallop. Lalo barked, and I called out, "HEY!" at the top of my lungs. The camel stopped mid-stride, looking me straight in the eye, then turning its large head to the side with apparent indifference.

A man emerged from the palm hut, dressed in a white robe, with a red-checked scarf wrapped around his head. He neither smiled nor shouted as he walked towards me. He eyed Lalo suspiciously, dogs not having the same appeal in most of this region as they do in the United States. Like me, Lalo was an outsider, stuck on the margins. “Who are you?” he asked, not raising his voice. “My name is Emily. I am a teacher and a scientist. I am a bit lost, so I guess I am an explorer, too?” He did not laugh at my attempted joke, but his face lightened a bit. “A teacher? A scientist? An explorer?” he repeated, his voice younger than his face looked. “Then we are the same,” he continued. “Come, you will sit with us, and we will talk of what you know, but the dog stays out.” Lalo, in her uncanny ability to make sense of human words, looked from the man to me, cocked her head, then trotted off to rest under a palm tree at the edge of the plot.

He walked us towards the palm hut, and the man motioned for me to join the woman and child. “Welcome,” said the woman, indicating for me to sit on a pillow she had laid down for me. She pulled out a long, dark scarf and draped it over my shoulders and around my hair with a gentle precision, her fingers working expertly to tuck in stray curls that found their way out from the beneath the cloth. She poured me a cup of mint tea in a small glass. Gripping it at the top with my thumb and forefinger, I blew gently across the fragrant drink. Her daughter peeked at me from behind her mother, staring at me without the faintest smile. As I waited for the tea to cool, I looked around. Most of the structure was crafted out of material from the date palm trees. The cloth above us was propped up with the sturdy shaft of the palm leaf. The walls of the hut nearby were made of bunched and woven palm fronds. They seemed to be tied together with a rope of some sort. The roof was made of tightly stacked palm fronds cut neatly at an angle. They even seemed to have a gutter and downspout made of smooth and hollow mangrove branches leading into a metal bucket, a rain barrel for the occasional downpour. It was clear these people were travelers too, but they had made their home here for some time.

“Thank you for the tea,” I said. “It’s been a long day of travel.” “Of course,” she replied, “we have been watching your progress since the morning. We expected you earlier.”

“I stopped to rest. I had to. To come all this way by myself…it didn’t seem so far when I started, but…” I trailed off.

“Distance and time pass slowly when you are alone in the desert,” she said. “Trust me. I have spent years travelling with my husband and daughter. Before she was born, when he would leave on expeditions, I would be all alone in the camp, sometimes for weeks at time, with no one to share my ideas with, no one to make me think, make me laugh. No one to challenge me. Now I have her,” she gestures the daughter hiding behind her back, “and she makes me laugh, makes me think. She is certainly a challenge, the best kind, I would say. Smarter than average with a wild mind.” “How so?” I ask, ever curious about the ways of children, and the imagination of their parents. “She started reading before she was three; I don’t know how. I didn’t teach her…told her plenty of stories, and her father and I have too many books. One day, I found her sitting with the camels, reading to them like a schoolteacher to her class! And she is always running off, collecting bits of rock and bone, picking up bird feathers and shed lizard skins. Sometimes she disappears for hours, and we can’t find her, but she never gets lost. She just leaves for a while." The woman's daughter reminded me somehow of every child I had met and taught in my life, of what I wanted for them for their future: curiosity, adventure, wonder, and a deep love of the natural world. "Sounds like she has a rich imagination," I said, "and a need to move.

"Yes, and to learn! She is so curious. Why are you so curious, girl?" the woman asked her daughter with a playful laugh.

"And you?" she questioned, turning her attention to me. "You must also be curious and driven to find yourself way out here." "I suppose so. Yes. My family would say so. My friends too. I guess I am good at paying attention, making connections. I can't seem to go a single day without feeling the way everything links to the other, without wanting to explore a new place or idea. For better or worse. Even now, I am here because I heard a single sound and had to know what it was."

I continue, "I am a teacher…well, I teach teachers… We are in the process of building the most extraordinary school dedicated ecological literacy. I was on my way to the school site when the tire went flat. Then Lalo started barking, and before I knew I was waking up under a ghaf tree in the middle of the desert."

"You know the ghaf tree?" she asked with surprise.

"Yes, well, I am an environmental scientist, and I design curricula and teach teachers to "do" ecological place-based education: getting people to connect with nature, learning to understand the places around them. Nature is the greatest teacher, and I sincerely believe that education needs a different sort of teacher. In fact, we need to rewrite the test, so to speak, if you ask me." There was that *hopeful vision* again.

“Better yet, do away with it,” she replied with a smile. Seeing the look of surprise and recognition on my face, she explained, “My husband and I are both teachers, he of culture, place, and politics – geography, you might call it? – and me of art and poetry – you know how we Arabs love a good poem.” Her eyes shone as she spoke. “We teach wherever we travel, we travel to places we can teach,” she continued, “but mostly we live for the journey. We learn through our experiences, and we think most children – and adults – learn best in that way as well. Part of it is about turning your imagination on, using your imagination to make every opportunity work in your favor. Then pushing a little further each day, each year. Another part is about finding your tribe, your people, the ones who will try things out and take risk. Then you crow about every good thing they do, make them understand that you see them, that you appreciate them. The other part is making your own way, your own systems. Make it up as you go. The last part is just plain hard work and a bit of stubbornness.” She looked up as her husband approached our tent, signaling for us to join him. “Come. Dinner must be ready.” Surprise at the mention of dinner being prepared while we women talked must have registered on my face, because she laughed out loud. “You will find there is little conventional about our family,” she said with great joy. “To travelers like us, it’s not enough to imagine a different world; you have to be willing to create it.”

A hopeful vision requires imagination. We settled around a fire that had been built between the tent and the camel corral. The woman dished out bowls of rice spiced with coriander, cloves, and cumin. The subtle smell of nutmeg against the sharp sweetness of cinnamon reminded me of baking cookies with my sisters when I was younger. Each dish was topped with a small piece of meat, perhaps chicken, and slivered almonds. They had clearly gone out of their way to prepare this dish, showing me their generosity and hospitality through their actions. “Tell us more,” the woman began, “about your life’s work and your intentions.” And so, I began to share with them about my own childhood in the dunes and forests of the great lakes, my love of nature and the people who had guided me down this path of ecological education for a more beautiful world. I explained how I believed that an education connected to place, to the genius of the land and its people, could revolutionize education in the future. I told them how I imagined a loving community of passionate ecological educators, inspiring a wild curiosity for the world around us. They seemed delighted by this idea, commenting on the irony of having to look to the past in education in order to move forward. I told them of my desire to reimagine schooling, to rewrite the tests or do away with them completely, to create something truly different with relationships, imagination, and action at its core. I reassured them that I was not alone in this effort, but that those of us committed to education for ecological literacy and environmental sustainability were few and far between, and I was here to develop teachers who could educate for ecoliteracy, to create a space where nature, art, science, and community would nurture and inspire a great love of the world and a deep connection to the place in which we live. They nodded as if they understood completely and urged me to say more.

Holistic learning needs supportive frameworks. “You see…” I began again but trailed off as self-doubt got the best of me. “I’ve been working on a framework of ecological literacy, not so much for evaluating students, but more to guide the teachers and our leaders in planning and implementation. I don’t believe there is any one way to truly measure ecological literacy as the board has asked me to do, but I do believe this framework could help us create experiences and opportunities for students – and teachers – to develop their uniquely personal strengths, while also acting as part of a bigger community – from the doors of the classroom to the widest edges of the universe."

I stopped talking, feeling I had said too much, that I had lost my audience. Instead of looking bored, they were nodding enthusiastically. I jumped up to find a stick to write with, and began to make a grid, five by five. "What I envision is a curriculum that aims to nurture children who are ecoliterate: compassionate, creative, curious, and courageous when it comes to interacting with one another and addressing the ecological issues of our modern world. The way I see it, children who are ecoliterate learn not only to read the world, but also to integrate this knowledge of place and interaction with nature so that it guides our thoughts, actions and words. The outcome, ideally, is huge: to create a more beautiful, sustainable and just society. For me, a student who is ecologically literate spends time outside, playing and exploring with a sense of wonder; they understand and recognize nature as a teacher and place to learn; they have a deep and caring connection to the community; they use their imagination and unique intelligence to solve local and global environmental problems."

I continued, "I have created the framework centered around five dimensions meant to illuminate the big ideas from ecological and sustainability curricula around the world: ecological knowledge and understanding, sense of place, curiosity and wonder, ecological mindfulness, and environmental justice and stewardship." I pointed to the boxes along the top of the grid as I name the five dimensions. "These dimensions are all interrelated, and they can be rewritten and rearranged as needed. What is important is to use them to help keep our minds open to the many ways we might observe ecoliteracy in action in different forms. For example, maybe a student wants to better understand how material cycles through ecosystems. Or maybe a child's strength is in their introspection and ability to care for other living things. Perhaps they demonstrate ecological mindfulness by watering plants or simply sitting quietly in nature. Maybe they like to take action, like your daughter, and they work to solve problems affecting the community. There are so many ways, and these examples are meant only to spark the imagination of the teachers so that they may feed the fire of ecological education in their own way, so to speak." The fire in front of us popped and hissed in response, and a gust of wind made the flames jump higher momentarily. I felt a movement behind me, and a warm weight pressed against my back. Lalo had snuck into the camp, as if called to me as I described my intentions and expectations. She was doing her best to stay out of sight. "That dog," the man asked, his voice sharp but not without kindness, "what's her role in all this?" I smiled and shrugged my shoulders. "To be honest, I think she's guiding the way at this point, keeping me honest, helping me see what I would otherwise miss," I said with an incredulous huff of laughter.

We sat in silence for a moment, and Lalo rearranged herself into a tight ball of fur. The man rose suddenly and said goodnight. "You have worked hard. You must be tired." Then he took his leave, nodding at me with a look that felt comforting and full of acknowledgement. The woman went to get some blankets from her tent, and she built me my own nest to sleep in. "The wind has died down, and it won't be cold tonight. It may not be as comforting as an evening in the arms of a ghaf, but I think you will sleep well," she said as she tucked the blankets around me. I hadn't realized how exhausted I was. I was surprised by how much excitement I felt from sharing my ideas with another, after so much time with it alone in my head. They hadn’t shut down my ideas, and that alone was reassuring. As I fell asleep, the words of another educator, the great philosopher queen, Maxine Greene, twisted through my mind: “I am forever on my way. I am becoming. I am, I am, I am…not yet.”

~The Snail Walks On~

I woke up as the sun rose dimly through a thick fog that had settled over the camp in the evening. Unlike the day before, this morning I wasn’t surprised to find Lalo nestled into the crook of my body. As soon as I moved, she was up, licking my face and stretching her own body. The woman and man were already up and moving about. It seemed that their daughter was either still sleeping or already out exploring. I wondered if I would see her again before I left. I hoped so; she reminded me of why I was here in the first place: for the kids, the teachers, and the world – a big vision, but my true one.

As I folded the blankets, the woman approached me, carrying my bag, which was now stuffed to overflowing. “I hope you don’t mind, but we have put together a few things for you to take on your journey. It’s hard to know what you will need out here, so don’t be surprised if it doesn’t all make sense at first glance.” I peeked in the bag and saw a ball of twine and as well as an assortment of small colorful cloth bags of who knows what. A fragrant aroma came from a metal container, and I knew there would be another meal or two of spiced rice kabsa inside. “We packed you some hot tea as well as some more water. You should be able to reach the place you are heading to by evening, and there should be water there. You’ll know it when you see it.”

She fixed the scarf around my face and shoulders and handed me a floppy and worn sunhat woven from palms. I smiled, recalling my wish for portable shade yesterday.

“Shelter. From the sun,” she said knowingly. “It can be relentless.” She paused and looked towards Lalo who was already making her way up the closest sand dune. “Take care out there. And mind the weather. Out here, you never really know what the day will bring. Wind, rain, flood, draught…I’ve been thinking about what you said last night. It seems to me that ecological education and ecoliteracy, like natural systems, rest upon the idea of dynamic balance: change is inevitable, so how will we respond? It is the most diverse and cooperative ecosystems that are the most resilient, that bounce back from disruption more quickly than the rest, is it not? You are on your way, yes, you are. You are headed in the right direction, but you still have a way to go. It will take time. Keep your vision in sight, and you’ll be less likely to lose the way.”

I waved to her husband and wished I could say goodbye to the wild child, but she was still nowhere to be found. I pressed my hand against my heart and bowed to the woman. “Thank you,” I said with sincerity. “You are most welcome,” she replied, then turned and walked back to her tent. I hitched my bag over my shoulder and felt the full weight of it press into my clavicle. I hoped the walk would not be long, but I also looked forward to another day exploring the landscape as I made my way…where? “You’ll know it when you see it,” both Buddy and the woman had said, though their words gave me little clarity or comfort. Lalo barked happily as I started walking towards her, one foot, then the next, setting off tiny avalanches and raising miniscule tornadoes with every step.

The snail interprets unambiguously. As described in previous vignettes, I did not find much ecological collaboration at Desert School, as most of my “peers” were not themselves ecologically literate. In the first few months of my time in Desert City, I reached out to the few sustainability minded educators I could find. As I connected with others, I was particularly inspired and supported by a small and eclectic group of educators from the United States and Canada. The camel farmer and his wife – two travelling teachers – are meant to be composite characters representing the sustainability "tribe" I came to rely on for professional feedback. These were also some of the same people who volunteered as "others of similarity" (Chang, 2016), when I as in need of greater perspective, and I have reflected some of the ideas and intentions they shared with me through the words of the woman. When I was unable to get feedback from my colleagues at Desert School, these were the people who critiqued my initial ideas, provided encouragement, and helped me to make connections with organizations around the region. While they were not part of the Desert School ecology, they were part of my personal and professional ecological community.

~The Snail Finds Her Place~

The day turned out to be long and hot, any of the coolness of the night having burned off with the dawn fog. I thought about the sands I played in as a child on the shores of the Great Lakes, and the way they made this landscape seem somehow both familiar and foreign. As I walked my bag grew heavy on my shoulder, and no matter how many times I switched it from side to side, I found myself wincing with the pain. I sat down to rest, draping the long black scarf the woman had given me over my body like a tent. The woven palm hat kept it from flying away each time the wind kicked up.

I looked into the bag and pulled out the bottle of water the family had refilled for me. I drank and rested, noting the lack for clouds in any direction. I nibbled on a biscuit but couldn't break into the kabsa; the heat and sun had stolen my appetite for real food. I rifled through my bag a bit more, curious as to what else the woman had added. A ball of twine, a pack of matches, a thin blanket. I reached randomly for one of the colored bags, drawing out a deep blue pouch with a bit of anticipation. Loosening the drawstrings, I looked inside. Three small glass jars rustled knocked around and a set of paintbrushes poked through the opening. I brought one of them out and untwisted the cap. Paint. Paints and brushes! Happiness spread throughout my entire being. With a sudden urgency I set about creating an impromptu art studio: jars of paint dug carefully into the surface of the sand, a splash of water in each; brushes poked into the dune bristles up; journal balanced on my knees, open to a clean page.

A piece of paper fell to the ground as I pulled my notebook from my bag. It was a note from the woman at the camel farm. I unfolded it and one by one, words spread across the page, “For the Artist Scientist: may you capture on paper what blossoms you find during your walk in the desert. Be resilient and nurture beauty. Stay open to the lessons of the earth. Don’t be afraid to reimagine the world but know you may have to build it in shifting sands.” Suddenly inspired, I mixed colors in the jar lids and tested them in the corner of the paper. I looked out across the landscape, then I looked once more and began to paint, finally able to see where I was.

The dunes undulated in every direction across the page: rich golds, bright tangerines and pockets of deep oxidized reds. Dusty green patches of panicum grass and bushy arfaj added cool splashes of color to the otherwise warm palette. The bluebird sky complemented the ochre sands and ivory patches of rough and crumbling rock peaked from the tops of the highest dunes. I painted a falcon soaring in the sky and watched it lift off the page and fly into the sunshine. I added a tiny lizard to the page, then I felt it skitter across my feet as I sat. I turned towards Lalo who was still walking a quarter mile ahead of me. Her pawprints were tiny circles along a crisp and curving crest, their own artistic design in the sand. Behind me the camel farm was a speck in the distance, or possibly that was just the sun playing tricks between the valleys and ridges of sand. I added these details as best I could without aiming for perfection; I wanted to be *deliberate, yet spontaneous* in my work.

I looked up again, hoping to see something new, and I noticed tracks crisscrossing the sand several dunes over, the parallel tracks of an SUV unmistakably linear in the rolling hills. I thought of the dunes in my hometown and how heavy foot traffic coupled with powerful winds had caused the mountain of sand to erode and shift, eventually collapsing, burying trees and cars and even once a little boy. Peering across this golden dune, I painted in the deep impression left by heavy vehicles with huge tires, dark scars across the landscape created by a different and arguably more destructive type of traffic. Tiny white SUVs roared to life, climbing up and down the page, spinning their wheels and throwing sand high into the air.

The scene in front of me reminded me of the reason I was here in the first place. Not because the car broke down or I heard a strange noise in the night, but because of a *vision* to build a school unlike any other for a world yet to be imagined. I felt both silly and certain in the largeness of this mission, doubting my skills while believing almost completely in my ability to create just about anything I might imagine with enough time and the right tools. I put away the paints and brushes and ate another biscuit. I could no longer see Lalo from where I sat, and the thought of losing sight of my guide was unsettling. I found her tracks along the ridge, saw them pass over a ridge, down into a valley then up long and gently sloping angle before dropping sharply over the steep leeward side of a dune. I projected where she must be headed and was surprised when my eyes landed on a spot in the distance, an obvious hive of activity I hadn't noticed before. Even in the sunlight I could see bright lights burning. I knew exactly what I was looking at. *Here we go,* I thought. *There is work to be done.*

The Snail Imagines Spaces

The tawny dunes had gradually changed to white as we hiked nearer to the coast, and my shoes were now coated in a thick gray layer of dust. I could feel the earth movers before I could see them, their rumbling motors shaking the earth so that grains of sand jumped into the air. The hollow clang of metal on metal rang through the air as a small crane deposited a load of steel joists at the edge of the shell of a three-story building. The top floor was open with rebar and girders reaching up toward the sky. Organized pallets of cement block, interlock, wood, and glass lay strategically around the lot, but piles of construction debris took up even more space around the yard. We had arrived at Desert School.

Even unfinished it was clear this would be a huge building with more than adequate space. I thought back to the model I had seen in the shining Head Office and tried to identify different aspects of the campus. There to the south would be the parking lot, to the north the football pitch and playgrounds, to the east would be the greenhouses and ecodomes, and to the west a small but unaccounted for corner of land wedged between the school, the street, and the bus parking lot. Originally the plan was for me to focus on the development of the climate-controlled ecodomes, but discussions with the architects and project managers quickly made it clear that the ecodomes would be the last stage of construction, despite promises to teachers and families for school year start readiness. I was told to focus on figuring out an alternative. When I had pressed for options for space on campus, Buddy had pointed to this pocket of land on the margins of the school grounds. “This is supposed to be tennis courts,” he said, “but I think we can hold off on that for now. Maybe you can do something with this space?” He’d rushed off to a meeting after that, and I was left staring at squares and arrows on a blueprint.

We are just flying the plane, I thought at the time, *building it as we go*. There is an improvisation to ecological place-based education, which I find exciting. It draws on my creative tendencies and the desire to keep learning, while at the same time allowing me to tap into my deep knowledge of ecological systems. For me the actions of *deliberate spontaneity* that arise when “doing” ecological education draws on the artistry of teaching Eisner writes about as innovative, drawing on the “tension between automaticity and inventiveness that makes teaching, like any other art, so complex an undertaking” (2002a, p. 155). For all its unpredictability and messiness – a deterrent for some educators (Demarest, 2015; Sobel, 2008), at Desert School I fully realized that ecological education pushed and pulled me into and out of my comfort zone on a regular basis, and this was the point; this was what I loved. And it was this love that allowed me to stay focused, to put in the hard work, as one teacher told me (Csikszentmihalyi, 2013).

While I walked towards the site, I considered the particular square Buddy had pointed to, wondering how I could build something beautiful enough to capture the imagination of teachers and students and resilient enough to thrive in the harsh desert sun. As I walked, I ticked through the options: a temporary greenhouse, an interactive playground, an outdoor classroom, when the obvious answer settled in my mind. I remembered the terrace garden I built with children at a previous school, how the kids gently planted and cared for cherry tomatoes and hearty basil with their small hands, and I knew exactly what we needed: a learning garden. Now I was here, and I wasn't just looking at a proposal on paper. Everything about the noise and dust and moving parts meant reality and work in progress.

I walked toward the west side of the building, carefully stepping around bits of discarded wire and drywall. No one stopped me as I walked. In fact, I could have been invisible for all the notice that was paid to me. Lalo, who had been running joyfully ahead of me most of the day, was tucked tightly behind my legs, and I kept clipping her with my feet as we walked. We rounded the corner of the building and looked at the place Buddy had promised me. Piles of smashed concrete were mounded throughout the space and broken wooden cable reels were stacked haphazardly. It looked as though someone had been using this for general trash as well: coke bottles, food wrappers, and plastic utensils were scattered about the gray sand. A pipe poked up from one corner surrounded by a patch of wet sand. At least there was water.

~The Snail Clears Space~

Unsure of how to begin, I set my bag down in a corner and pulled out my notebook and a pen. I paced out the perimeter of the space and drew a rough outline in my journal. I noted landmarks that I could see beneath the rubbish – a circular cement pad of some sort, the water pipe, and not much else – and sketched them onto the page. Then I pushed the notebook back into my bag and tugged my hat onto my head. I found a plastic bag among the garbage and began to collect all the trash that I could. Lalo joined in, bringing me plastic bottles of soda and discarded food containers, no doubt licked clean by my clever companion. As we worked, I sang and hummed to myself, and Lalo occasionally seemed to pick up on the tune and barked in time with the beat. As I set down yet another bag of junk in the ever-growing pile, a man with a thick beard and dark curly hair sprouting from under a white hard hat came straight towards me, a scowl on his face.

“You are the one in charge of landscaping, is that right?” he asked gruffly. “Well, sort of,” I started, used to clarifying for people confused by the complexity of my role. “I actually am responsible for the curriculum and the outdoor spaces—” He cut me off, “So the landscaping. Great. We won’t be ready for you for a while – there is so much to do, and we are behind schedule – but you can familiarize yourself with the space.” “Okay,” I said, figuring I would have a chance to clear up the confusion shortly. “For now, I was hoping to at least get started on this space. Buddy told me I could use it to create an alternative space while we the ecodomes are being built.” At this the gentleman scoffed. “Those are a long way off. Long, long way off,” he said without adding any other details. “I was thinking of creating a learning garden here in the meantime,” I said, looking out towards the piles of cement and discarded construction materials. “Is that so?” he asked, and his thick eyebrows arched up under his hardhat in disbelief. He tilted his head to one side, and a smirk played across his lips. “I can send some men and machines to help you clear this out, but otherwise you’ll be on your own. Now, I have to go. There is too much to do and not enough time to do it. It was good to meet you, Ms…” “Emily,” I offered. “Ms. Emily,” he repeated, then without waiting for me to respond, he turned on his heel and marched back in the direction he had come from.

Sometime later, three men arrived. They were dressed in the loose-fitting blue kurta pajama of recently hired immigrant laborers, and they neither carried tools nor brought machinery that would make this job short and easy. The bottoms of their salwar were tucked into the tops of dusty and worn black work boots. One pushed a yellow wheelbarrow in front of him, the wheel wobbling and squeaking on a crooked axle. I greeted them with a hand on my heart and noticed that Lalo was nowhere to be found. Using mostly hand gestures and simple English, I explained that we were going to clear the space now covered with junk. They understood despite my inability to speak any Urdu, and soon we were busy working side by side, loading the wheelbarrow again and again as the sun sank into the western sky. When the call to prayer sounded over a loudspeaker, they excused themselves, returning twenty minutes later and continuing as if they never stopped. The sky turned from blue to purple, the stars began to pop out by the hundreds. On this far side of the campus, there were no bright lights, and we worked as dusk turned to night. By the time the moon rose in the sky, illuminating the dark space like a streetlamp, the lot was free of litter and debris. What seemed useful had been stacked in neat piles and what was pure rubbish had been carted away. What was recently becoming a landfill was now an empty clearing full of potential.

I thanked the men, and they left me standing alone in the night. From the shadows, Lalo crept close, wagging her tail, her blue eye glinting in the moonlight. In the darkness, with the shell of a building off in the distance on one side and the desert stretching out in every other direction, I felt disoriented. Lalo’s presence helped remind me where I was now and where I had come from. I built a small fire ring in the center of the plot, and I dragged out a several scraps of wood from one of the piles we had set aside. I tore up sheets of old newspaper and cardboard for kindling and arranged them into a small bundle. I surrounded these with some of the smaller scraps of wood and stacked a few of the largest pieces neatly on top. Using the matches from the woman, I lit the paper and watched the flames catch quickly on the dry wood.

Remembering the woman's words of encouragement from earlier this morning, I drew my notebook and paints from my bag and spent a moment capturing the day. Then I pulled out the thin blanket she had snuck inside my bag and tried to recreate the cozy nest of the previous evening. For yet another night, Lalo snuggled in tight against me, and I fell asleep under desert skies.

~The Snail Watches the Clock,
Lalo Gets a Nail in her Paw~

I spent most of the next day traipsing around the site, mostly trying to stay out of sight and definitely keeping out of the way. Large earthmovers drove back and forth across the campus, carrying load after load of cement, piping, wire, and steel. The rhythm of the day was punctuated only by the call to prayer emanating from a loudspeaker somewhere nearby. The workers moved with speed and focus, walking with their eyes looking only toward their next destination. There seemed to be no time to pause, to catch a breath; certainly, there wasn't a moment lost to daydreaming. A large clock counted down the seconds, minutes, and hours left until opening day, and the ever-diminishing number caused me to feel a distinct sense of scarcity I hadn't felt before.

I heard a yelp and looked around to see Lalo limping in my direction. I rushed towards her, and felt gently down her leg, looking for a reaction. She tenderly held her right front paw off the ground, and I grabbed it gently. A small metal nail had punctured her paw, and she tried to pull away anxiously. "Hey, good girl. You're okay. You'll be okay. Just a moment – there. It's out. With a little time, it will be better than new." I ripped off a bit of my shirt, now filthy from two days in the desert, and wrapped it around her paw, giving her a soothing pat around her ears and face. I looked back up at the ticking clock, and an invisible pressure settled on my shoulders and chest as the countdown continued with a loud tock, tock, tock.

The Snail Interprets Unambiguously. This pressure of time was not a surprise, but it was certainly a constant constraint throughout the entire process of bringing the school to life (Hodgkinson, 2013; Tubin, 2009). It arose for the teachers as well, as will be described later, as a scarcity of time to reflect, plan, or even take care of their personal well-being. While I did not set out to examine the barriers and obstacles of starting a new school, they were inevitably revealed initially through coding and systematic analysis of the data, and further illuminated when I began the process of creating the descriptions and interpretations of our work. Obstacles and barriers, like time or the mismatch between policy and practice described in earlier vignettes, or lack of curricular freedom, or even limited conceptual and content knowledge which will be illuminated in future vignettes, often felt like splinters, nails, and pokey thorns, sometimes painful, often distracting, and always frustrating as we went about the work of bringing a new school to life. At the same time, we all, in different ways, dealt with these aspects of our school ecology in our own way: diligently working through them, venting to our peers about them, pushing back against them, or trying to explain why they "had to exist." While these obstacles are common, especially in startup schools, I believe they do not have to be so pervasive if time is made to clarify intentions and priorities, and a culture of creativity is nurtured from the earliest days. I will provide further evaluation of this idea in Chapter Five.

~The Snail Works with Lalo to Collect and Connect Disparate Pieces~

Having been given permission to use the west side of campus for the learning garden but being left with neither materials nor clear plans to work from, I set out to create something from nothing. With help from Lalo, who, with her wrapped up paw, was more of an enthusiastic cheerleader than actual assistant, I collected the largest scraps of wood I could find. They seemed old and worn, having been baking in the hot sun, but the boards were sturdy and seemed like they would hold up against most any force. They reminded me of the English National Curriculum, durable, long-lasting, and rather straight forward. Unlike some standards and frameworks, which encourage students apply their learning to problem-solving and understanding phenomena or develop critical thinking, collaboration, or even creativity as valuable skills (Batelle for Kids, n.d.; Next Generation Science Standards, 2013), the English National Curriculum, as interpreted by many Desert School administrators, was a set of standards to be delivered clearly and unambiguously. I saw them as sets of knowledge and bits of required information that could be taught through ecological education.

We carried discarded pallets to the Garden, knowing the evenly measured wood would be useful for giving structure and consistency or providing a framework to build off of as needed. I thought of these as the IPC, the curriculum framework from which I developed more robust and authentically place-based projects. They IPC “projects” were fine as written, but they didn’t leave much room for spontaneity, nor were they place-based or focused on ecological literacy. They were a good framework to provide some initial support, but nothing I would proudly hang my ecological hat on.

We collected concrete bricks of different shapes and sizes, and I imagined the many ways they could be arranged and rearranged as needed. To me these were the various place-based and sustainability education examples and models I have drawn on for years and used to create the Desert School Framework for ecological literacy. These were tools such as the NAAEE guidelines for excellence (2019), Sobel's seven nature design principals (2008), and the Shelburne Farms Big Ideas Framework (Shelburne Farms, 2014). Undoubtedly, we could add activities and opportunities, like bricks, as we found or created them along the way.

On the far east end of the compound, someone had dumped a pile of date palm fronds. I remembered the palm thatch hut from my night in the desert with the woman and her family, and I imagined the possibilities they opened up for the Garden. To me these were the local insight and expertise we would collect over time and through connections made through our community. I looked around the site, unable to see anything resembling a date palm tree nearby. I figured this was probably someone else's trash, left in this corner before this was even a building site. I looked at Lalo and said, "As the saying goes, one woman's trash…" Lalo wagged her tail then chased it for good measure. She seemed as excited about this project as I was.

We continued our search for useful materials. As I collected bits of wire and dropped nails, Lalo rummaged through one of the piles. She managed to find several long, thick tree branches buried among the construction waste, and I watched as she tugged playfully on the end in a one-sided game of tug-o-war. When the large stick came free, Lalo tumbled back in surprise. She rearranged herself, then picked up the branch in her mouth and trotted it toward the Garden. I carried another thick branch in my arms, and as we walked a vision for a structure crept into my mind. Lalo gently set down her branch, then placed a paw on it and looked at me proudly. I could have sworn she said, “See, we have exactly what we need right here. With me around, you can do anything.” I laughed as I imagined her confidence and pride, but I knew without a doubt it was true.

This day of imaginative diligence, of organizing and rummaging was for me one of the more joyful, when there was a sense of productivity and integrity to my actions, as if all of my knowledge and hard work, imagination and creativity, and sense of wonder and openness were able to come together to support each other with clarity and ease. While most days were not like this, I appreciated the moments that felt like whole and complete expressions of the artistry emerging from the ecological community.

~The Snail and The Dung Beetle~

That evening Lalo and I feasted on the last of the kabsa from the woman, and I enjoyed the last bit of tea as we sat around another small fire. After a day of hard physical work, and several days of constant thinking, I was exhausted. Nearly as soon as I lay down, I was asleep. I slept hard for most of the night, in a deep, quiet, cave of rest. Sometime near dawn, when living and dreaming mix, I watched a tiny dung beetle crawl slowly across the landscape. Miniscule parallel tracks crisscrossed the landscape, and the small ripples in the surface took on the impression of a miniature desert. I watched a black beetle make its way across the minute dunescape thinking how some of the smallest things in nature hold the greatest wonder if you know what to look for. The beetle seemed to move in slow motion, pushing a small bit of dung in front of it. As it pushed, the fleck grew larger and larger until it was the size of a golf ball, then a softball. Suddenly the beetle reared up and tossed the ball of dung my way. It landed with a soft thud on the ground and broke apart, splashing crimson red all over my feet. It was a small watermelon, just larger than my two fists and fat with juicy fruit and full of shining black seeds ready for planting.

I wiped at my eyes, half expecting the beetle to be staring out at me in the morning light. Lalo was sleeping soundly, but as I moved to look around, she bolted to her feet. I relit the fire and set about heating water in the metal container that had held our rice. I shook sand from the blanket and folded it, enjoying the feeling of home that comes from staying put in one place for even a short bit of time. I walked toward my bag to grab a pinch of mint for my tea, another gift from the woman, when I saw them: a tiny set of parallel tracks and a pile of bright green watermelons ready to be broken open.

Further Descriptions of Artistry in Ecological Education

With this next vignette, the educational criticism begins to transition from pure auto-criticism – the descriptions and interpretations focusing on my experiences throughout my journey at Desert School – into a more traditional educational criticism, where the descriptions and interpretations concentrate on making meaning of the situation for the other participants. With the next vignette, I paint a picture of the first moment I really got to work with the teachers, when I stepped from the role of primary artist into the role of the art teacher, so to speak. Following this vignette, *The Snail Transitions from Artist to Art Teacher,* I will provide further explication of my methods and madness in an attempt to provide the reader with clarity as I continue to experiment with arts-based research and representation (Barone & Eisner, 2012).

The Snail Transitions from Artist to Art Teacher

The day outside is bright, hot, and humid. The rented boardroom on the 15th floor has floor to ceiling windows with views of Desert City in almost every direction. The air conditioning is turned so high I have to put on a sweater, even as I sweat to get everything set up and organized on time. Powerpoint – check. Chart paper – check. Copies of the ecoliteracy framework – check. Markers, internet, scratch paper – check, check, check. I go around the room hanging chart paper with driving questions and guiding phrases, which I had created last night in preparation for today. This is a session I have taught many times in many different forms, so I am feeling confident. Except that I am also incredibly anxious to be presenting the ecoliteracy framework to a group of teachers – and the entire SLT – for the first time. As if introducing them to project-based learning in one day wasn't enough, I also have to integrate a crash course in sustainability and ecological education. For all the early talk of "60 hours of CPD" and "intense training in ecological education," I was allotted only one six-hour training slot for to introduce ecological place-based education *and* project-based learning.

A few teachers trickle in fifteen minutes before the scheduled start time. About five minutes before the session is to begin, the rest of the teachers arrive en masse, having been brought by school bus. As they grab coffees and biscuits from the table in the back, the hotel staff draw some of the blinds to block out a bit of the relentless sun. Teachers joke at looking forward to winter for the first time in their lives. I enjoy the sense of community already emerging after only a few days together.

I ask them to take their seats, and we get started. There is a lot to cover today. The first slide reads: "Start where you are." An X marks the spot where they presumably stand. Below that there is a quote from David Orr that I hope will set the tone: “It’s not education that will save us, but education of a certain kind.” This quote is a driving force in my work, and I hope for them to see early on that what we are doing is different than anything most of them will have done before. “Alright. Everyone up and out of your chairs. We might not have access to the outdoors, but we are at least going to move around and use our body. Around the room are three posters with the phrases Sustainability, Ecological Literacy, and Environmental Justice. These are the three pillars of our educational vision at Desert School. According to our vision, these pillars will be embedded into each and every lesson at Desert School. I am interested in knowing what these words mean to you. Write it down. There is no right or wrong answer,” I say. “Feel free to grab another coffee and take your seat once you’ve finished.” I often use this practice as a litmus to see where my audience is, how they perceive the ideas of sustainability and ecological literacy, sometimes described as environmental mindedness or environmental literacy. Interestingly, “environmental justice” is usually embedded within sustainability, but for one reason or another Desert School decided to pull this out from its traditional place as one of the “3 E’s” of sustainability, so I am not entirely sure how this will go.

As they move about the room, I encourage them to chat with one another, and I let them know that this isn’t about having the perfect definition. This is about putting our thoughts out there so that we can start making our own definitions as a community. It seems that their ideas are saturated quite quickly, as after only a few minutes I hear someone say, “What if what you were going to say is already written?” I encourage them to find ways to build on to ideas that are already on the paper, to play on an idea with different language or an example. I’m getting a sense of their lack of knowledge in this area; this is not surprising given what I know about their background. The lack of environmental or ecological literacy among educators is a topic of much concern within the field of environmental and ecological education (Liu et al., 2015; Pe’er et al., 2007; Puk & Stibbards, 2012; Timur et al., 2013). I expect that I will need a lot of time this year to develop their knowledge and understanding of ecological concepts, as well as their love of place (Orr, 1992). For now, it is my job to meet them where they are at (Sobel, 2005).

After they finish, we work together to summarize their thoughts into bigger ideas, and we write working definitions for the three terms that will hang around the room for the day. “Sustainability: Making sure we have enough for today and tomorrow.” “Ecological literacy: a way of reading and making sense of the world.” “Environmental justice: the fairness of how environmental resources are shared around the world.” Not bad for a start.

The next slide reads: “All education is environmental education,” another famous quote (within ecological circles) by David Orr. The teachers sit silent, looking at me. I have to push them to break the statement into singular words, and even still it is clear that they do not know, or want to share, much about their thoughts on education or the environment. I worry my introduction, with all my background in environmental science this and passion for education that, may have been intimidating. One teacher, who will come to show herself as an enthusiastic if novice environmental educator, raises a hand tentatively. “This is what we are trying to do here. The environment is all around us, and we learn from the environment. So, all learning is environmental,” she says. “Thanks for getting us started. Anyone else?" "We can teach about the environment in many different ways?" another offers as a question. "Absolutely. Let's dive into that a bit," I say, not wanting to drag this out and lose their initial interest with the philosophy and ecological theory I might usually include with a more ecologically minded group of educators. "Working with your table I want you to grab a piece of scrap paper and draw three columns. Then, I want you to list the skills, knowledge, and characteristics – the values, behaviors, beliefs – of an ecologically literate person. Think about what you would want your students to be able to do when they leave Desert School, from what you know of our three pillars and the mission." The teachers hungrily dive into this, and their lists quickly grow. I pull this momentum back to the whole group, and we start building our collective list of ecological skills, knowledge, and characteristics. While they may not know exactly how to get there, they certainly have an idea of where they want to go.

I introduce them to the five strands of the ecoliteracy framework, briefly describing each one as simply as possible: Ecological Knowledge and Understanding, Sense of Place, Wonder and Curiosity, Ecological Mindfulness, and Environmental Justice and Stewardship. (See Appendix D for greater detail on these strands and for an example of the original framework that was provided to the teachers). I emphasize that is it intended to be "Unique + Multifaceted; Accessible + Useful; Fun + Challenging; Growth Oriented," using a colorful and concise slide to emphasize these aspects of the ecological literacy framework. "Most importantly," I say, "these are meant to be looked at as a work in progress. These are not set in stone. I will be asking you for feedback as the year goes on, so that we can create a supporting document that helps you plan the best projects while supporting your teaching of the English National Curriculum." I assure them that in this first year I am not going to be coming around checking off what they have and haven’t covered, but that I would be supporting them in using the document as a planning tool. “I expect to be able to see your planning for these elements in your planning, week by week or day by day, but I know there will be a big learning curve for you and me as we bring this idea to life.” This is what I have discussed with the Head of Primary, Principal, and the Board – a slow and steady approach to developing ecological literacy in our teachers. I looked around the room and realized all of the other SLT, who were supposed to be attending today, were nowhere to be found. Unfortunately, it probably gave the impression that I was the only one who would be supporting them with ecological and place-based education development.

To help them start to wrap their head around this new framework, I ask the teachers to focus on only one strand within their year group, and to come up with examples from their experiences as educators that they feel would meet the different “criteria.” My intention was to help them start to connect their previous teaching experiences to this new way of teaching, to help them begin to integrate the framework, and therefore the beginning of a sense of ecological mindedness, into their educational practices. The teachers easily chose different standards and shared examples from their teaching. “I built a bug hotel with kids as part of a study on ecosystems.” “I once created a penguin nesting experience for my students to get an idea of the hardships a penguin goes through. It was hilarious. There was snow inside.” “I usually teach mindfulness to my Year Fives, to help them with the stress of testing.” I assure them that these examples are spot on, that in many ways they will find ecological education is something they already do in small ways, and that our aim is to amplify those small moments to eventually transform the whole experiences. They seem open-minded and willing to try. I am feeling excited to work on building these ideas into their projects and building off the diversity of experiences and knowledge within the group.

After this exercise we take a break, then jump into what will take up the bulk of the day: project-based learning. I've been told that I will get plenty more time throughout the school year to build on this initial introduction to ecological education and to make sure to give them plenty of time to work on honing their understanding of PBL. As we transition into this part of the day, I am both hopeful and worried; hopeful for their open-minded approach to these new concepts and the creative ideas they readily shared, worried that it is too much all at once, that our priorities seem a bit fuzzy and our foundations a bit unsettled when examine the big picture.

So many thoughts fly through my mind as the teachers begin to dig into the project-based protocols and planning documents I have given them. Are we emphasizing the ecological? PBL? The English National Curriculum? In my opinion the ecological is our foundation, presented through project-based learning that address the English National curriculum, but can we approach them all at once, or will too many moving parts mean an unstable base? Without the rest of the SLT present, I have no one to bounce these ideas off of, nor is there anyone to give me feedback on how they think the teachers received the workshop today. My notes from the evening after the session read, "I am trying my best to find balance, be gentle, be brave. But sometimes it's hard. Is it better to just admit that it is? And to whom...But I'll get through it. I know I will, because I always do. Just a matter of time and perspective." With the building just about ready, materials on their way, and a space cleared for growing, now it is time to bring the garden to life.

The Snail Puts Things into Perspective

To say the inaugural school year got off without a hitch would not be a complete lie, but it would be a truth with many omissions. Our spaces were not fully ready for use, as the school was still partially under construction, and the weather was still too hot for outdoor play. Classrooms, canteens, and gymnasiums were used for indoor recess. Two days before the school opened, I was sent with the head gardener to “green up the place,” as the board put it. This ultimately meant buying thousands of dollars of soil and plants and feverishly repotting them and distributing them around the school. Every hallway, office, reception, and classroom had a touch of green. One day later, I was informed that children were playing in the dirt of the potted plants and touching the leaves. Now the board was asking what I going to do to “clean up the place.” “We will have to teach them how to care for this place. It will take time, but we’ll get there,” I explained over and over, while purchasing brooms and dustpans to show students how to sweep up spilled dirt. I didn’t clarify that I meant *both* the teachers and the students would have to learn how to care for this place going forward. Knowing how to manage the chaos and messiness, including spilled dirt, is part and parcel of ecological place-based education (Demarest, 2015).

And it continued. The first month flew by in a flurry of crying toddlers, missed buses, dirty lunchrooms, lost ID tags, non-existent systems, and a general feeling of systemic entropy. The big picture we could clearly see only months before seemed to be scattered in pieces on the floor. It was too hot outside to plant much, and the trees planted around campus drooped in the heat. The ecodomes fell further behind schedule due to engineering issues. The outdoors were practically inaccessible.

The teachers struggled as well, and not only because of the heat. Teachers' planning, crystal-clear when written on paper, cracked and then shattered when tested by reality in those first few weeks. Our solid leadership aims for lesson study and on-going feedback "from day one" and "teacher as researcher" were absentmindedly tossed into the fire, their vitality dispersing like ash in ever changing winds. More than a few new teachers went home sick or in tears, the stress of a new year at a new school in a new country taking its toll on the body and mind. All of the Senior Leaders, myself included, found ourselves at school at all hours of the day, in meetings that lasted entire evenings, and covering classes when no substitutes could be found. We were exhausted and yet resilient.

Week after week we showed up, put in the long hours, and smiled at one another with tired eyes. We were the pioneer species, finding our way in a new landscape, knowing that if we could just find purchase – a crack, a divot, a softened piece of earth – where we could latch on, breathe, and replenish, we would be able to grow strong and make this place our own.

A highlight from this time was a field trip to a local park and the beach with the Year Four Class. I planned with the teacher, and we organized the day with the purpose of recording some of the soundscapes of Desert City with opportunities to play and practice mindfulness outside. The day went off without a hitch, and even though the weather was hot, the students sweated through it with joy. At the beach students collected shells and recorded the sounds of waves. One child rushed up to me holding a starfish, marveling at the tiny prickles all over its body, “even its belly.” At the close of the day we sat in a circle in the shade of palm trees and the teacher guided a mindful listening session. When we packed up to leave, the students kept talking about how awesome it was that they got to go to a park and a beach, *for school*, and I felt a surge of heart-felt gratitude for the educational community we were creating just as I had intended. The emergent and yet organized aspects – the *deliberate spontaneity* - of the day had fueled a sense of play and connection for the students and teachers present.

As a school, we were a community in the making, a group of strangers, each with our own role and personality, each with our own voice and needs within the ecological community. So much of the literature around ecological place-based education focuses on the academic success of the students (Liebtag, 2019; Gruenewald, 2005; Lieberman & Hoody, 1998; Powers, 2004). There is also a growing body of work dedicated to the practices of ecologically minded educators (Burgert, 2013; Moroye, 2009, 2011; Moroye & Ingman, 2013) as well as the work of ecological place-based educators (Anderson, 2017; Demarest, 2015; Goleman et al., 2012; Sobel, 2005). *What do we still need to learn about forming healthy, happy ecological communities?* I often wondered to myself throughout this research. How do we build ecological integrity, how do we inspire ecological artistry moving forward?

Despite our differences, we were bound together by a common *hopeful vision* of creating a school unlike any other. Hammerness (2001, 2004) emphasizes the importance of acknowledging, honoring, and harnessing teacher’s intentions and visions as a tool to guide school reform. It was perhaps this passion combined with our diverse set of skills that helped us to find a foothold in a shifting land and move forward a little bit every day.

Every participant of the study, when asked about the reason they joined the school, explained that it was the deep commitment to ecoliteracy and sustainability, the sense of authenticity and purpose in a world full of schools with superficial missions and shifting foci. This was also one of the key reasons I joined the school as well, and it turned out to be a driving force for the other participants in this study as well. As several of the other participants put it, we were trying to "create something truly unique" in education, perhaps "the best of its kind anywhere in the world." We believed that what we were trying to build could change the world, and so we persevered along the rocky terrain.

Towards the Growing Season

The following vignettes move the dissertation from the auto-criticism more fully into the educational criticism. I begin to describe and interpret the experiences of the three teacher participants throughout their first year at Desert School. Each participant's section is composed of two parts, as explained previously. In Part 1, I present the teachers' intentions and expectations of their roles at Desert School, as well as a bit about their path to the school and their understanding of the mission and their role in carrying out the school vision. This is done through a fictive situation that included the teacher participants in the creation of the learning garden. Part 1 incorporates elements of magical realism, as well, further blurring the line between fact and fiction (Faris, 2004). That said, none of the teachers were actually involved in the construction of the garden. This was a laborious project that involved me working with a permaculture specialist and a gardening team, as well as an irrigation specialist. It was several months in the making, followed by months of observing, shifting, planting, and replanting as I learned the personality of the garden plot. When I started sorting through my notes to tell the full story of the learning garden, I was overwhelmed by its complexity. In many ways, the story of building only the learning garden for this school could be the focus of an entire book or separate dissertation. I knew it could not be left out, but I needed to find a way to illuminate what was valuable in the experience of creating the garden, while also managing the data as efficiently as possible. Hence, I centered the stories in which we meet the teachers around this place on campus.

In Part 2, I present literary vignettes describing the structural, curricular, and pedagogical dimensions of the school ecology as observed in the teacher's practice (Eisner, 1992, 2017). Guided by ecological concepts of diversity and interdependence, relationships and nested systems, cycles and flows, development and change over time, and equilibrium and balance (Stone & Barlow, 2005), and Eisner's evaluative and interpretive questions (2002a), three additional and embedded themes arose as defining features of community ecological artistry: *imaginative diligence, open-hearted connection, and deliberate spontaneity*.

For me, ecological artistry is an amalgamation of artistic and creative expression and community ecology. I use the term ecological artistry to describe the creative expression and artistic judgement that arise from the dynamic interaction of people, their environment, and the relational communities in which they live, work, and love, or otherwise dwell. Ecological artistry is about what is created when people and places come together or push apart as they try to do something different from what they have always done with the intention of bringing about significant change, particularly in a new environment.

The themes *imaginative diligence, open-hearted connection, and deliberate spontaneity* complemented the original three intentional themes of *hopeful vision, holistic learning, and responsive action*. They are complex juxtaposed binaries, reflecting the dynamic nature of ecological communities, creativity, and artistry (Csikszentmihalyi, 2013). As you read, my hope is that each participant is seen as both an individual with their own experiences, intentions, expectations, and expressions, as well as an individual tightly nested within and influenced by the creative community ecology. The following vignettes and stories of each teacher, both magical and real, provide illuminations of the three themes as expressions of the community ecological artistry.

Descriptions of Mr. Kit AKA The Fox

My first memory of Mr. Kit is not of actually meeting him but talking about him as a potential teacher hire. He was described as someone who was quite versatile in music and sports, and who had previously taught abroad. I pictured Mr. Kit as someone who would use his diverse knowledge and cross-curricular interests to bring the projects to life for the benefit of the students. *Anyone can learn the national standards*, I thought. *Not everyone can be comfortable with the chaos*. The first time I really worked with Mr. Kit, I found him to be overflowing with ideas for his first project. Working diligently, he filled in the entire project planner with ideas, organized by subject, building off the concepts suggested to him in the project outline. “How are you feeling about this project?” I asked him, tentatively. “Actually, really excited. I love music and making music, so I really like the question and idea of making some sort of recordings to make people feel closer to nature. I’m just playing around with ideas right now to see what seems to fit together best.” Later, as part of the research, I asked him what desert animal he would be, and he responded with the kit fox, found in the southwest of the United States and northern Mexico. He explained that he “didn’t have some deep and edgy reason for it, except that they are cute and elegant.” I didn’t push him to explain any further, but I could see immediately why he might be drawn to this animal. Along with being cute and elegant, they are adaptable and able to survive in harsh climates, like the Arabian Desert. They are very aware of their surroundings and a bit skittish at times. They are incredible resourceful animals. Mr. Kit in many ways embodied the fox, from his ability to stay remarkably clean in messy situations to his adaptability with constantly changing structures and systems, and his willingness to try almost any new educational idea. Of the three dimensions, or themes, of ecological artistry which emerged in this study, Mr. Kit most often expressed the creative attitude of deliberate spontaneity, which is also so very inherent in the nature of the fox. The following stories and vignettes present Mr. Kit in action, as a new ecological educator at Desert School.

~Mr. Kit, Part 1: The Fox in the Garden~

The Fox Expresses His Intentions and Expectations

Several months into the school year, the weather finally started to change, and the cooler mornings ushered in the moment to really get started with the garden. One day as the sun rose, I sat watching Lalo chase a dung beetle across the garden lot. The west corner was still in shade, and the tracks of the tiny beetle covered the sand as it raced away from Lalo’s gaping mouth. I wondered how hard each climb must be for the dung beetle who’s every day consists of passing back and forth, back and forth, pushing literal crap up miniature hills and down into miniscule valleys, all while on the lookout for the scorpions and desert mantis that mean predation and death. Without these resilient and hardworking critters, the world would be one big hot mess of dung, feces, excrement.

I was so caught up in my imagination that I didn't hear Mr. Kit approach. "Hello," he called out. "Mind if I join you?" I looked over my shoulder in surprise. "Buddy said you might be here," he continued. "I thought maybe I could help you. I mean, I am not exactly sure what you are doing, but I love learning and would be happy to lend a hand." He ran a hand through his dark hair, giving it a tug that left it spiked out in several directions. "You might get a bit dirty," I said, pointing to his slacks and shiny shoes. "I'm a primary teacher; I'm used to that. Besides, you've seen my classroom," he said with a smile. "So, what are we doing?" I explained my vision for the learning garden, pointing out the different materials we could use, and being clear that while I had a vague idea, a lot would have to be figured out by trial and error. "Again, I'm used to that. The way I see it, you sometimes have to make a lot of crap to create something really fertile!" Mr. Kit barked a joyful laugh then began to roll up his sleeves. I thought of the dung beetle pushing so much crap across the earth, and I knew I had found a friend. Lalo seemed to agree, and she gently pulled Mr. Kit toward our treasure trove of borrowed and collected things.

The organic part. In the garden, Mr. Kit and I began pulling out materials from the many piles Lalo and I had built up over time. We laid out the large tree branches Lalo had tugged from the bottom of a junk heap, the ones that reminded me of the sturdy, nearly unbreakable English National Curriculum. Mr. Kit began rearranging them into different configurations. Every so often he would rush over to a notebook laid out in the shade and make a sketch or jot down a few words. I watched him work silently, helping him to move pieces as needed, asking questions about the work in progress. “This is the organic part,” he said to me, smiling. “With a bit of time and a bit of a think…” he trailed off as his focus returned to the planning. I interpreted this to be an expression of his intention to be *responsive in his actions*, to learn from the different materials, places, and people he works with. His words and the way he moved between planning and doing implied to me a comfort with uncertainty and a desire to let things emerge slowly and *deliberately yet spontaneously*.

A big vision. I wanted to know a bit more about this character I was working alongside. “So, how did you end up here, Mr. Kit, in the middle of the desert, so far from home?” I asked as we carried another branch from the diminishing pile. “I worked abroad before, and after returning home decided to do it again. The ethos of Desert School caught my attention: the ecological focus, the mindfulness and wellbeing. That is so noticeably lacking in other schools. I have taught a bit about ecological awareness but a lot more like tabloid newspaper ad lines: WE MUST RECYCLE BECAUSE IT IS GOOD!” He used his hands to frame the title in the air. “You taught this out of your own interests?” I asked. “Well, it was based mostly on the English National Curriculum, through the personal social health education. There is no exact curriculum for [this sort of ecological teaching] in the UK, but there are schemes of work, such as relationships, environment, and citizenship; mainly I taught through that. We would always have a couple initiatives going on in school, like a “save plastic drive” or something around a national initiative. Nothing as deep as we’ll delve into here. I thought it’d be awesome to have all the facilities in the world plus the strength of the ENC to combine it to create what I think could be the best education in the world." I realized Mr. Kit was describing his own *hopeful vision*, and it mirrored mine in so many ways.

I thought of the difference between a complementary curriculum and add-ons, and how often ecological education falls into the category of "extra," placing additional burdens on teachers already stressed by overstuffed curricula (Moroye, 2007, 2009; Moroye & Ingman, 2013). My hope was that, over time, teachers at Desert School would find ways to complement the National Curriculum with materials, examples, and experiences that drew on their own unique ecological and place-based interests, so that the ecological was not extra but integral to teaching and learning.

I felt at home. "So, why does this type of school appeal to you?" I asked, wanting to know more. "Well, when I was younger, I was really interested in the environment. I used to work for Ox Fam, and we got quite into fair trade. I met some interesting people and learned about how farmers are paid and the price of donkeys and goat…" he laughed, seeming to recall something from his memories. "It just caught my attention, that Desert School is trying to make it a bit more real than just another TV advert, to have it instilled into the whole education. It hollered back to Hippy Kit." Now we both laughed, and I pictured him in a tie-dye shirt and sandals. "Was this a phase you went through?" "Yeah, when I was younger, I was super into nature. I felt drawn to plants and trees. I can't say I did a bunch of research into it," he said, implying that he didn't know much about plants and trees, possibly the environment, "but I felt at home. I want that for my students." His voice grew soft as he said this, and I inferred a strong sense of authenticity in this intention; he wanted to create a place for *holistic learning* for his students, where they too could feel at home in nature. *Holistic learning* is not easily definable, even by the experts in the field (Miller, 1992). It is an approach to education that intentionally seeks to create connection, to bring together different subjects and ideas that are often separated and siloed in traditional schools (Gruenewald, 2005). It draws on the head, spirit, and intellect, similar to what Orr proposed as connective or ecological education (1992).

We had stopped working and stood facing one another. Lalo wagged her tail as she looked at him thoughtfully, and I nodded in recognition of what he was saying, understanding completely. This is how I felt growing up. “As a human being,” he continued, “I felt the benefit trees could have and enjoyed being out in nature. So, when I found this opportunity, I thought, ‘Well, yeah…this would be great for an educational setting.” He gestured at the desert around us, the empty lot just waiting to become something else, and I could imagine the school he held in his mind’s eye. As he said this a wind kicked up, and Lalo barked happily. I watched as a swarm of dung beetles rose from the ground carrying a small branch towards Mr. Kit’s outstretched hand.

“So, what does ecological education mean to you? In what ways are you an ecological educator?” I knew I was being forthright with my questions, but I really wanted to dig into his ideas and expectations as a teacher at an ecological place-based school. “I think it means helping children to feel close to nature and feel as though they belong in nature, which is increasingly more difficult, especially in places like Desert City, which is very fast paced and consumerist and commercial. Here, “success” is based on wealth and having,” he said, making air-quotes around the word success, making clear his divergence from the culture of consumerism that is rampant in the city. He continued, “Here there is not a lot of being and appreciating what you already have, and that is what ecological education is in my head. I try to use mindfulness in my teaching, to help get my students to think about wants versus needs. Like, if I were to bump into them in the lunch hall, and they say, ‘I’m going to buy three cookies.’ I try to push back and say, ‘Hold on a second.’ Or getting them to think about the resources in the classroom. It can be a matter of getting them to step back, to get them to think about what they need a bit more that way.”

Mr. Kit started working again as he spoke, and a form was starting to emerge from the sticks in the stand. I watched as he selected a smaller branch that fit perfectly into an empty space and would save it from being wasted. As he worked it was hard to tell where he ended and the wood began. He lashed the branches into place, and the dung beetles did their best to help without getting in the way.

“I also try to make things practical and applicable to their daily life as well. Like if we are talking about urban ecology and green spaces, in a sense of clean air and reducing flooding, I want to actually have them put their ideas into practice and to visit places in real life to see examples. I want to have them put their ideas down through sketches, then bring them to life. You know, in education, there is a lot of theory and a lot of ‘we could do this’ or ‘let’s just draw a picture of that,’ and the fact that we really try to bring things to life really brings the learning home. They can consolidate it, and then afterwards they can think about how we got there, and we can see that we did this, this, and this. To get them to realize why they have done it, and not just do it only because it is fun. That is what makes teaching really rewarding.” I beamed at Mr. Kit, feeling uplifted by his carefully expressed vision of ecological education. Already he was emphasizing the importance of connecting school and home, something Dewey and the nature- and place-based educators whose work – knowingly or unknowingly – builds off of his, have been highlighting for decades if not centuries (Anderson, 2017; Dewey, 1897; Leslie et al., 1999; Sobel, 2005). Mr. Kit saw the school as an extension of the home, and vice versa. In fact, it seemed he saw the school as a place with the potential to be experienced as another home.

Teaching diverse skills, using a creative approach. We started hammering branches into place, using the found nails and hammer I had "borrowed" during our scavenger hunt yesterday. I helped Mr. Kit brace the branches against the heavy blows. "What do you see as the mission of Desert School?" I asked, wondering if it would be similar or different to his own personal and professional intentions. There was a big pause as he ran his hand roughly through his hair a few times. He seemed to be weighing how to answer this question, and I remembered that he might see me not as a friend or peer, but in my role as a Senior Leader. Or perhaps he was just considering the question deliberately, with care.

"I think we are trying to create people who are ecologically aware and equipped with the skills to combat ecological threats such as climate change and deforestation through the English National Curriculum, while at the same time teaching them the skills that will equip them with a wide set of interchangeable skills. Before arriving, I imagined an education centered around environmental justice and ecology. I didn't know exactly what that looked like; possibly I still don't. I also imagined a focus on well-being and mindfulness being integrated through the entire school ethos. I imagined it would be a free, kind of artsy place, with a creative approach," he finished outlining his imagined expectations for this school we were in the midst of creating and looked down at the ground. Something remained unsaid here, and I sensed that Mr. Kit had imagined this "free" and "artsy" place" not just for the kids, but also for the teachers. In several encounters over our time working together, he expressed disdain for rigid systems or protocols he deemed unnecessary. Many teachers express frustration over the structures and forms of evaluation that so often seem to drive their teaching (Gallup, Inc., 2019). They want to be able to be *responsive in their actions*, to give their students exactly what they need, but are often stifled by agendas set by others higher up. Teacher's need to feel free in order to express their creativity to the fullest (Miel, 1961; Niehoff, 2018). In creating environments where teachers can express their own artistry, children too can express their own imagination without fear (Eisner, 2002a). It often seemed Mr. Kit preferred to make things up as he went, and I knew he was a teacher who would need – and thrive with - this sort of freedom. I looked down at the wooden structure lying in the sand, and I suddenly understood what Mr. Kit was building.

Something to grow from. "What role do you think you play in carrying out this mission?" I asked, still staring at the structure at his feet. Nearby Lalo began frantically digging holes, and the sand sprayed up in the air in shimmering arcs. "I feel more like a founder," he stated with no hesitation. "I feel like someone who is trying to put together the infrastructure, the framework for this to exist. And of course, it will grow over time and change, but it has to have something to grow from. I mean, the history of the UK curriculum has been what it has been for ages. It's like 'we're' doing Romans, we're doing Egyptians," he rolled his eyes and spoke in a flat voice that implied a boredom with the Romans and Egyptians. What he didn't say implied a hunger for spontaneity and imagination. "So, once you've done it once – I guess I haven't seen too many times that the UK curriculum has the best, most practical ways of doing it. It is more run of the mill, whereas we are kind of just setting it up. We are kind of laying down the foundation. In ten years, when all the trees grow, we may have our projects down to a T, but it will take time…you know…" he paused midsentence "…can you help me lift this thing up?"

I realized Mr. Kit had finished hammering and tying, and he gave the final configuration of branches a deft kick to check their strength. We heaved the heavy wood up from the ground and got it balanced in place. We stepped back to admire what we had built, Mr. Kit and I, and of course Lalo took some credit as the great hunter of useful surprises. "Well, Mr. Kit, this is a start," I said, looking hopefully at the arbor in front of us. A support. A framework. He smiled, and said, "It's something to grow from for sure."

We decided to place the trellis at the natural entrance of the garden, and we dug in the posts as deep as we could manage, stopping only when we hit the hard, white layer of caliche half a meter below the surface. Lalo pushed sand back into place with her paws and nose and promptly christened the area in her own way. The dung beetles scurried off as the daylight faded to dusk. Mr. Kit and I laughed as we worked, wiping away sweat and wincing as blisters formed on our fingers and palms. We knew the hard work was worth it. After we finished, we stepped back to admire the dark frame of interwoven branches, envisioning students coming from inside the school to the outdoors, arriving at a place where the pavement met the earth and trees held up the sky.

Rumbles in the Desert

Before Mr. Kit left for the evening, we feasted on watermelon and drank mint tea. We saved the seeds from the melon for planting. I built mounds of sand at the base of the new arbor, and we pushed several of the black, tear-drop shaped seeds into each hill. I collected a bit of water from the leaking pipe and wet the freshly planted soil.

Lalo happily chased around a bit of watermelon rind, jumping high into the air to catch the pieces we threw towards the sun setting in the sky. She, like Mr. Kit and me, seemed to be energized from the creative process, despite the hard work. Before leaving for the night, Mr. Kit assured me that he'd be back soon, saying he was inspired by our talk and had work to do.

So much of Mr. Kit's intentions reflected the three major themes found among all of the participants, me included. He spoke of his *hopeful visions* for the school, of becoming "the best" of our kind of education. I was reminded of Orr and the "certain type of education" that just might save us (2004, p. 7). His intentions reflected *holistic learning* and the desire to create a school that made learning real for his students by "bringing it home." He spoke openly of the need to consider this a work in progress requiring *responsive actions*. He referred to the "organic part" and the need to give it time to see what might emerge. Interestingly, Mr. Kit did express a bit of frustration over what seemed to be an allusion to a lack of freedom. At one point he seemed to imply that he thought the school would be more artsy and free than it actually was.

Like place-based scholars, Mr. Kit seemed to view what we were doing as a creative process, and he had no problem thinking of himself as a founder and a creator of curriculum (Demarest, 2015; Smith, 2002a, 2002b). Mr. Kit, like all of the other participants, surprised me in one way: for his recognized lack of knowledge of ecological systems, he expressed an overarching *sense of ecological integrity* through his words and actions with regards to his intentions. He expected a school dedicated to caring for the world by addressing ecoliteracy and environmental justice; he wanted the kids to not just imagine the world differently, but to bring their ideas to life. This is what Orr wrote of when he spoke of connective education, what Sobel envisioned when he described using the local spaces *as* the curriculum (Orr, 1992, p. 138; Sobel, 2005, p. 7). Excited for what was to come, I made some sketches and notes about the last few days, then I settled into my blanket without a fire. Lalo seemed wired from the excitement of the day, and I fell asleep to the sound of her shuffling and running through the sand, unable to sleep.

That night the growl of racing cars roared through the night air, keeping me somewhere between dreams and coherent thought. I saw images of shining white SUVs storming up the dunes, then leaping from the top of sandy waterfalls and plunging into the valleys below. The rumble was so loud and vibrant I swore I watched the earth crack open with my eyes closed. Beneath me the ground shook and shuddered. Nearby Lalo ran in ever widening circles, kicking up dust behind her before diving below the surface of the sand. When I woke briefly at dawn, I noticed the sturdy arbor had shifted in the night and Lalo was nowhere to be found.

Mr. Kit, Part 2: The Fox in Action

Moving from the garden into the classroom, the following vignettes describe and interpret Mr. Kit “in action” as a classroom teacher at Desert School. These vignettes are based entirely upon observations of the participant throughout the study. They also incorporate findings from collected artifacts and follow-up conversations. They are presented as a selection of the many observations collected during my time observing and working with Mr. Kit. The ecological artistry themes of deliberate spontaneity, imaginative diligence, and open-hearted connected are illuminated throughout the description and interpretation. These describe the quality of the expression of artistry and creativity embodied by the participants as they worked to bring Desert School to life.

Expressions of Structure

The Fox Prefers Organized Chaos

I think of Mr. Kit's room as a creative collage, a work in progress. His boards are at once organized and organic. Some of his announcements are months old, while photographs from this week's class performance are already printed and displayed outside the door. In many ways, his classroom is a reflection of his teaching style, *deliberately spontaneous*, emergent, responsive. I am reminded of his project planning, which is thoroughly outlined in the beginning and filled with ideas, activities, and potential readings. Once a project is underway it is rarely annotated as the Head of Primary requires. A refrain I have often heard from Mr. Kit is that he would rather spend time planning better activities or more meaningful experiences for his students, responding to their needs in the moment, than going back to his computer to type up the changes he makes on the fly. As a more spontaneous teacher myself, I understand his frustration. I also recognize that we have changed the systems so many times, it could be hard even to keep up with which planning document to use, which may feel like an additional burden to navigate.

Outside his door, like every door in Desert School, is a clear plexiglass frame for teachers to post announcements, write up dates, and share news or challenges. Every area, like "Parent Notices," "This Weeks's Activities," and "Dates for your Diary," "Homework," and "Class Topics" has something filled in. The announcements are written neatly in cursive. His board also includes creative, independent challenges that provide students with open-ended opportunities to practice relevant academic skills. One challenge reads: "For 2 house points, write one or two paragraphs using the yellow words, and one or two paragraphs using the blue words. You might decide to write a diary entry, a play, a short story, or a part of a story. Use your imagination." On the door are pictures of every child on "World Book Day." The kids are smiling and posing enthusiastically dressed in their literary costumes, and right away this class feels like a home.

Inside the classroom, the walls are a light peachy-brown, reminding me of a sand dune in early evening, when they take on the colors of the sunset. The walls are covered with student work and notes from ongoing projects. There is a daily timetable that can be erased and rewritten to the right of the whiteboard. The classroom rules are posted on a large piece of paper. Mr. Kit tells me that the students went through a process of creating the classroom rules together very early in the year, allowing him to be responsive to their needs and ideas from the very beginning.

A smartboard and whiteboard take up most of the rest of the wall. Mr. Kit stands at the whiteboard leading students through the practice of making mind maps to organize their thoughts and get their creative juices flowing. To the left of the whiteboard are two behavior charts: one that Mr. Kit has used during most of the year and a new one recently initiated across the school. Like the planning document annotations, Mr. Kit voiced frustrations about the introduction of new systems more than halfway through the year, complaining that the changes are disruptive to the students and not conducive to organization. "For me, it just kind of feels like we're throwing a lot of things around, trying to come up with something." He often speaks of letting things happen "organically" and trusting the teachers and the vision.

At his teacher workstation – not quite a desk, but an organizing area – his laptop is open. Three are different iterations of our timetable are taped to the wall, color coded, but still confusing. There are notes from other teachers and handmade notes from students. On the couch next to the station, copied papers lay in organized piles, ready for the next lesson. There is a large hand painted world, with the words “I am unique!” written across the middle. This is surrounded by cutout painted hands from each student. A cork board is covered in personalized learning goals, and hangs tilted at an angle. Light pours in through the floor to ceiling windows that take up the majority of the rest of the wall. From where I stand, I can see the “green walls” designed and built by Mr. Kit’s class.

Surveying the room, one wall seems like a real hodgepodge. There are four posters the students made for a radio contest; there is work from moral education about the Country Leaders; there is a collection of illustrated words for how to act. All have been displayed in clustered collages, with simple descriptions of each set of pictures or drawings posted next to the collection, in the patchwork displays Mr. Kit seems to favor. Even this speaks to organic and emergent attitudes towards teaching.

The project board is full of notes, some up to date, some left over from the previous project. The label on the on the board still says Green Walls, even though this is the start of the Chocolate project. I imagine Mr. Kit excitedly tacking new items right on top of older notes, a true constructivist board-built brick on top of brick. The listed vocabulary words are ‘organism, habitat, omnivore’ under the label Science. There is a place for maths, with different hand drawn images of the mathematic symbols, as well as the words used to describe them. Notes around the board in colorful construction paper provide reminders for writing. There are big handwritten definitions of urban ecology, the driving question from the last project, and a breakdown the word “sustainable” into sustain (stay) and able (being given to; capable of) and having “without harming the environment” along the bottom. There are organizing bins for materials, plastic 3D shapes, and a bin full of exit passes. The students stand up and get materials as needed while they work. The room feels homey and comfortable, if a bit cluttered, and the students seem happy in the organized chaos of their little community.

The Fox Guides a “Reflective” Meditation

More than many teachers at Desert School, Mr. Kit intentionally incorporates different spaces around the school building into his planning. I take this as a sign that he is comfortable teaching outside of his own classroom, as he regularly takes his students to different locations around campus depending on the nature of their lesson. Today the class is seated in a circle in the reflection garden. The sound of the small waterfall trickles through the sunlit atrium, and a cricket is chirping in a corner. The children are quiet, and each student has a hand painted candle holder set in front of them. Inside each container a tealight is nestled in a pile of course sand from the Learning Garden.

“For mindfulness today, we are going to use the light of the candle to help us focus our minds and breath. You’ve each created your own unique candle holder from recycled materials, and now you will have a chance to see what it looks like when it is lit from inside. Once the candle is lit, I’d like you to take a moment to observe the light passing through.” He gives a brief safety talk, then Mr. Kit and I move quickly around the circle, lighting each votive before returning to our own seats within the circle. The students silently focus on the flames flickering in front of them.

After a minute or so, Mr. Kit invites the class to do some belly breathing while they focus on the light coming from the candle. The students place their hands on their bellies. Some instinctively close their eyes. Other intently focus on the tiny flame in front of them. Mr. Kit guides them through five deep inhales and exhales with a calm and quiet voice. When they finish, he tells them to place their hands on their laps and turn their eyes to him.

"What did you notice?" he asks. "I saw the flame move when I breathed out," one student offers. "I could see a tiny bit of smoke coming from the flame," says another. "Great," Mr. Kit says calmly. "What about the light through the candleholder, what did you notice there?" "In some places I could see the light perfectly," says one student. "Yes. Can anyone explain why that is? Remember what we've been learning about in science." "Because the plastic is transparent?" asks a student. "Yes. Exactly," says Mr. Kit. "What else?" "Some places it looks like I have two flames or a bent flame!" a child blurts out. "Okay. Can you think of why that might be? Please raise a hand." I take note of the way Mr. Kit uses this mindfulness practice to help students make links between their "book" learning and real-life, an actual burning flame. I watch in amazement as he creates a moment of authentic and *open-hearted connection* with his students, the material, and the space around them. One student sits up particularly tall and stretches a hand high in the air. "M?" Mr. Kit calls out. "Uh…uh…it starts with an R…reflection, reflection….no…refraction! Light bending!" "Wow, excellent," encourages Mr. Kit warmly. "What else?" "Some places the paint blocks all the light, and some places the light looks a different color." "Yes. Tell me more." "Because somethings are opaque, not transparent. And some let some light through…I forget the word." "Some things are translucent," Mr. Kit offers. "What was this like to concentrate on the flame while doing belly breathing?" "Nice." "Calming." "Exciting!" "I liked trying to breathe to make the flame move." "Great. Sometimes we can focus our attention on something like a flame or other object to help us with our mindfulness, just like focusing on our breath. Great work describing what you saw as well. Now, it is almost the end of the day, so we need to head back. Let's take one more deep breath, then we will carefully blow out our candles, and quietly line up. We will leave the candleholders here so they can cool off, and you can bring them home tomorrow. Okay, deep breath in, and…out…." The students inhale and exhale with focus, then calmly form a queue at the door. I reflect on how this lesson in many ways incorporated aesthetic dimensions within the instruction. I think of the emotional side of an aesthetic experience in education, the importance of creating opportunities for interaction and continuity between the student and the subject at hand, for integrating a singular experience into a student's past and present, for helping them become curious about what else there is to learn (Dewey, 1934). I wonder if this is just coincidence, or if the planner I gave the teachers with subtle CRISPA guides incorporated (McConnell Moroye & Uhrmacher, 2018) played a role. In this lesson, Mr. Kit has made opportunities for students to build connections, engage multiple senses, and look more closely at something otherwise familiar. There was even a bit of risk involved because of the use of a real and very hot flame (Moroye & Uhrmacher, 2009). Mr. Kit talked in his interview about his desire to create a holistic, comforting, home-like environment in his classroom, and this lesson seems to have done just that for a richer, more meaningful experience for both the students and the teacher. I let my thoughts got as I watch the children chatter quietly and wave goodbye. The smell of melted wax and burnt wick wafts through the room, and the only sound left is the trickle of a small waterfall.

Expressions of the Curricular

The Fox is Responsive

It is early morning, and the students have yet to arrive at school. I am doing my rounds, peeking into classrooms, saying good morning, and generally checking in before I get swept away by another hectic day. Sharing stories and being present for the teachers is my way of intentionally expressing open-hearted support. Mr. Kit pulls out two plastic shopping bags stuffed full to the brim. “I went shopping this weekend! Look at what I found,” he says excitedly. He begins pulling items from the bags. Large strings of fairy lights – “To hang up around the room,” he explains; individual fairy lights, with a battery pack – “To play with during science experiments”; fairy lights attached to a solar panel and the top of what looked like a ball jar lid – “I am not exactly sure how we will use these yet, but I thought they would be interested to work with the solar panel, get a bit into the sustainability aspect.” This goes on for a bit, as he pulls so many different types of lights out of the bags. His idea is to launch the project with a dance party decorating a room with fairy lights and playing games. Or there will be a bonfire. Or both. Either way he has a black light and a disco ball, and he has talked to the Head of Primary about digging a firepit.

As he continues to show me other items, Mr. Kit is smiling and animated. He admits that he isn’t quite sure what he will do with some of the items, but they looked like fun for the kids. For example, there is one that looks like a rabbit. You squeeze its tail to make the light turn on and off as well as change the color of the rabbit’s bum. Mr.

Kit seems ready for anything. His assortment of props will allow him to respond to the students' enthusiasm in many different ways. As a new ecological educator, he seems to be embracing the more student-centered approach.

"I think the kids will find this one hilarious," he says of the rabbit light, smiling and sort of rolling his eyes. We brainstorm how he could black out the room – sheets? Black paper? A tarp? What about a room with fewer outside windows? Briefly we look over his project plan, and I point out to him that he doesn't have much of a week by week plan to complement the robust overall plan. Suddenly his mood shifts, and he starts to explain that he doesn't like having to have every little thing planned out, that a sketch was really enough for him, and that he made changes as needed as he went. "I wish we could just be trusted to do our job," he said at least once. "I do trust you, Kit. I do. But the Head of Primary has asked for this. I know that everyone plans differently, but we will need this for our inspection, and it is better to get into the practice now than to have to make it all up later." He runs a hand through his hair and agrees that it made some sense. This need for annotation and recording of *everything* is an ongoing battle between myself and the head of primary, but I don't say that here.

I can't tell if he is just trying to make me feel better, or if it really does make sense to him. This is a difficult point for me, because, as a teacher, I am much more like Mr. Kit – big ideas and concepts outlined and organized but allowing more detailed plans to emerge week by week or even day by day. Later, reviewing notes from the initial interview, this moment makes even more sense. During the interview I asked Mr. Kit to tell me a bit about how this has influenced or changed his life and teaching. He explained his approach to ecological project-based teaching, "You have to be responsive. When things go well you have to think…well, we were going to move on, but I am going to run with this. You fill in some project time because you go deeper in. Or you think no, that wasn't so hot, and we are going to scrap that or rejig it in some sense."

Using this approach to planning, his first project had been truly exemplary in terms of ecological, place-based, project-based learning, even for a teacher new to this approach. He was not only deliberate, but also spontaneous; he not only covered the content but did so in a way that resulted in original music created by the students as well as a class full of kids who could enthusiastically explain the science of sound while also discussing the benefits of nature on our bodies and minds. His projects had only gotten better since then. Who was I to stifle his process? Unfortunately, many of the school structures seemed to limit some of the freedom Mr. Kit and I had expected for this ecological school.

Back in that Sunday morning meeting, I offer a compromise, "Just send me a picture of what you have done, anything. I don't want you to have to retype it or anything like that, but we need to have it documented in some way." In my own way, I am trying to be responsive, while also making sure that I am meeting the accountability standards set for me. He agrees to do that, and I told him I'd check in in a day or so if I hadn't heard from him. Students start to trickle in. I greet a few of the students before excusing myself so he can focus on morning routines. I leave him standing in the door holding a light up rabbit butt with slightly stressed look on his face.

The Fox, Behind the Scenes

In the beginning he planned with *imaginative diligence*. Mr. Kit meticulously filled in all the boxes required of the medium-term planner: maths, science, history. How can we create sustainable light installations to light our green spaces? he wrote as the driving question. He listed out several sub-questions, such as, Which items do we use that need electricity? What is the history of electricity? How do electrical circuits work? What are some different ways of creating electricity? and What is sustainability? He wrote a brief description of the project for anyone who wanted the bigger picture, and he filled in ideas for ways to get the project started that would engage the students' interest and excitement:

> Parents will be invited to a presentation where the children will present on their learning throughout the project. It will involve a description of how the children went about designing and creating their products (a prototype sustainable lighting installation) and the catalogue. Parents will be invited to 'place orders' for the lights (this will inform some maths lessons for the following week). Children will also share writing centered around the figurative meaning of light, based on the book 'The Dark', by Lemony Snicket. Children will present learning about how we can combat light pollution.

Originally, Mr. Kit wasn't exactly sure what these prototypes would look like, but his planning documents notes that the "lighting will be designed using natural and recycled materials."

Standing in front of the ecodomes two months later on a relentlessly sunny day, I watch in awe as the students present their learning and final work during the project celebration. Mr. Kit opens the presentation with a brief introduction to the project, then turns over the celebration to the students as he always does. Mr. Kit moves off to one side of the semi-circular bleachers holding a student written script in hand. He is ready to jump in if anyone gets nervous or forgets their part. In evaluating teaching and learning, so often the focus on the results achieved by the *students*. How did they perform? What did they know? What did they create? Eisner encourages us to look at the work – in particular, the artistry – of the *teacher*, to consider it as not just important but vital to the improvement of schools (Eisner, 2002a). Watching Mr. Kit, I see the imagination and innovation Eisner wrote about, that balance between “automaticity and invention” and between being organized and disciplined but also playful that drives artistic teaching – and opens up space for artistry in learning, as well (Csikszentmihalyi, 2013; Eisner, 2002a, p. 155).

In many ways, Mr. Kit’s celebrations are a choreographed performance, both imaginative and deliberately organized, a clear example of both his expertise as a teacher and his own creative attitude. It is obvious that time and effort have gone into preparing for the day. Each detail is carefully minded: every student has a role to play, English language learners have practiced tough vocabulary, examples and props are ready to help students demonstrate their learning, and there is almost always a reading of student writing.

Today is no different and the students seem to be bouncing with energy. Some students use their notes, while the majority are comfortable enough to ad-lib their part. Mr. Kit only steps in once to remind a student of their turn. The rest of the time he smiles and nods, occasionally looking or pointing to a student who was up next and throwing me nervous glances when a student stumbles through an explanation. He is a play director in the wings trusting the actors to do their part after months of hard work.

As the presentation draws to an end, Mr. Kit steps in front of the audience. “I’d like to invite a particular student up to tell you a little bit more about the actual products we created. In many ways, he was our resident expert through the production part of this project. With help from a local Maker Company and this student, we were really able to bring this project to a whole different level.” The student introduces the parents to the process of 3D printing and what prototyping means. He explains a bit about the materials and equipment used in the process, then he invites the parents into the ecodomes for a demonstration and presentation of the products. Mr. Kit lets the students lead the way into the domes. After the demonstration, Mr. Kit speaks up once more, inviting parents to join their child to see the prototyped models installed throughout the ecodomes gardens. “They know what they are talking about and can explain it even better than I could!” he says to the delight of the parents.

As I observe Mr. Kit, the parents, and the students, I admire the way he thoughtfully interacts with parents and students alike. He is calm, and he makes jokes to parents, even as a major piece of his work, is on display. He encourages a reluctant student to take their parent to see their prototype. I notice that, despite his hard work throughout the project, he lets the students shine even though it was his imaginative diligence that made them sparkle.

I think of something Mr. Kit said during the initial interview, when I asked him how this sort of educational approach has impacted him as a person and educator. “It’s really just been a journey in terms of professional development, and I guess personal development, because it requires a lot of determination, perseverance, and resilience, especially when things don’t go to plan.” And so it is no surprise that he doesn’t tell the parents how the end product was a major change from the original plan. He doesn’t complain about how this change required him to shift his class schedule and do research in the evenings. He doesn’t mention that this change meant that he had to gracefully let someone else take over his classroom to teach an entirely new set of skills his students while he learned alongside them. He doesn’t elaborate on the intricacies of cross-curricular planning and evidencing learning while keeping the project focused enough to still address each National Curriculum standard. In the initial interview, Mr. Kit described the most daunting part of ecological education at Desert School, saying, “I think the breadth and depth is tough because you can’t really plan only a week at time. You have to know a bit about where you’re going to be 6, 7, 8 weeks into the project [even in the beginning]. And that one project often engulfs lots of different strands of the ENC, so it takes a lot of navigating through the curriculum, weaving in and out of the different strands of topics to find out how I am going to get from A to B. You pick them up along the way, then assemble them in a way that complement one another. The beginning of a new project is quite a stressful point because there is quite a bit to prepare for, as is the end of a project because there is quite a bit to get done by the day, that when those two things come together, it’s just like PHOOOOW, boiling kettle out my ears.” I remember him putting his hands to his ears and exploding them outward like steam escaping from a teapot. Today, he is only a calm voice, quick wit, and a relaxed hand guiding student through the final scene.

This backwards design process, or planning with the end in mind, may be familiar for many ecological, place-based educators, as it is a common way of planning out projects and adventures from launch to final celebration (Demarest, 2015; Wiggins & McTighe, 2005). It is commonly referred to in project-based learning as well (Boss & Krauss, 2014), and it can be a very useful framework for managing the complexity of these more emergent approaches to learning. Through the initial training and many one on one sessions, I have coached teachers to use this process to drive their ecological, place-based design. When Mr. Kit plans initially, he is diligent about looking for local examples and connecting with community experts to support whatever project he is working on. In this case, he sought expertise from a local Maker Company, who helped him take his project to a new level in an unexpected way. By bringing them into his classroom, he had to let go of a lot of control. That said, he was able to remain organized, thanks to the initial planning and on-going adjustments, so that he could "pick up" missed bits along the way. In the moment of watching this, I wondered how much of this was innate and how much was learned as I considered how best to support other teachers in this sort of emergent and cyclical planning. Later, in a quieter moment, Mr. Kit told me that *my* support and attitude towards ecological education – a combination of passion and expertise – as he put it, helped guide his vision through many projects. This comment expressed the ecological artistry that emerges from the community as a whole for the benefit of all; a truly interconnected web of relationships making each of us stronger.

The Fox Does His Weekend Chores

> Hey Kit. Want to meet around 11 at the garden center? Will wait to hear from you before heading over. Can always go tomorrow as well. – Emily
> Oh hey, Emily. Sorry I completely missed this. I'm going shopping for the school show tomorrow, but does 12 today work? ☺. – Kit
> Yeah! That's fine. See you soon. Meet in the café area. – Emily
> Awesome. I'll see you down there. – Kit

I am early to the café, so I order a coffee and pick up a newspaper. The glass-walled café looks out onto the rest of the garden, and the lush greenery is a cooling relief from the desert brown and concrete beige. I am waiting for Kit to show up so we can go plant shopping for his current Green Walls project. The students have been working with a local green wall expert to better understand what sorts of plantings do best in the extreme weather of Desert City. In addition to that Mr. Kit took the class on a field trip to a local outdoor park near the creek for an in person look at the largest green wall in the region. They have been using their inspiration from that trip and input from the expert to design their green walls. Kit gave each group a few criteria, such as a budget and limit to the number of plants they can use. Working in small groups, the students have decided which plants they want to use, determined how many of each they can get for their budget, and drew out their designs. I promised Kit I would help him with the purchasing of the plants to share a bit of the heavy lift of this particular project.

After Kit arrives, we chat for a bit as we drink our coffees. Spring Break has just passed, and both teachers and students are adjusting to being back in school all day long. I ask him what that has been like for this particular project, which he designed himself from scratch. I delight in moments like these with teachers, when where *open-hearted connection* can prevail, and we make time to recognize one another as humans as well as teachers and co-workers. He perks up quite a bit as he answers my question. “Well, I am very involved in the content. I am quite a bit of a researcher, especially in project-based learning. As you know, the projects delve quite deep, deeper than the National Curriculum says you have to. It’s interesting doing that level of research, then bringing it back to the level that the children understand it.” I completely understand what he means. Especially when teaching through projects, there is this sense of needing to know so much so that you can let the kids wander and learn, but you also need to know it well enough to be able to translate it for them (Boss & Krauss, 2014). Project-based learning, especially through an ecological lens, requires teachers to make connections, draw in surprising information, and engage students with the community around them in interesting ways. It is a complex process that takes a lot of time.

“How much research do you usually do?” I ask, having heard Kit’s Phase Leader say on more than one occasion how much time he spends outside of work preparing for projects. The quality of the learning that comes from his projects suggest to me that it is worth it. Many place-based teachers will be quick to say that, especially in the beginning, the amount of time and research required to do place-based education successfully can be overwhelming (Demarest, 2015). For some it is enough to discourage them from this educational approach. I know from experience, having had several teachers express interest in place-based education, only to back out once they learn how much work it will be up front. With the many demands that teachers already experience, place-based education can seem like a bit too much extra work, despite its payoff for students and teachers alike (Anderson, 2017; Powers, 2004; Sobel, 2005).

“It depends,” he begins. “For example, for the Turn It Up project, I did a bit, but then I knew what I was doing because it was a lot more music based. Then with the Green Walls project, which we’ve just kind of come up with together, [I’ve had to do] quite a lot because we are talking about the plants, vascular, non-vascular and going down that route. We’ve been looking at existing vertical gardens and green walls. It might not actually be that complex, but you are just having to get to know an entirely different field, different occupation.” I tell him a story about my first year of teaching, how I planned an entire project around bridges, kind of a typical forces and motion bridge building competition, knowing nothing about bridges. By the end I was seeing bridges everywhere, could name the different types of trusses, and knew more about bridge building disasters than I cared to admit. Teachers doing ecoPBE, especially through projects, often find themselves as much in the role of learner as the students (Boss & Krauss, 2014). “Yeah, it’s like that,” he agrees.

We finish our drinks and grab a large cart to start shopping. I look at the list, and I start directing him to grab different plants. “There’s the aloe, over there.” “The pennisetum will be an okay replacement for the foxtail, though it’s different.” “Those philodendra are good and hearty as well as cheap.” “The portulaca will grow quickly and fill in gaps.” “Let’s grab some zinnia and marigold if they are available.” It goes on like this for a while: me pointing at things, Kit grabbing them, both of us double checking against the list.

I ask Kit about the field trip they took as a class, telling him I was bummed that I didn’t get to attend. Kit always has the best fieldtrips. I tell him how I heard from some parents that his last trip to the largest green wall in the region was quite a hit. “It’s just really interesting to see your choice of trips versus other teachers,” I say. “Yours haven’t cost anything the whole year. They have been based here in Desert City, and they were designed specifically for your project, not just some run of the mill the-kids-will-like-it experience that every child in Desert City does.” We keep pushing the cart around, looking for the last few plants on the list. A small cat winds its way through the tables and brushes up against Kit’s leg. “Yeah, it doesn’t really marry up does it, especially when there is so much to do here if you look around a bit. It takes more time, and I can’t wait to have weekends next year when I have my projects a bit more sorted. Like I had to go out to Green Wall Park on a Saturday.” He rolls his eyes. “But it was good in the end.” We find the last few items we need, including a couple of improvised swaps when plants the kids had requested were not available, and we head towards the check-out counter.

After we unload our purchases at school and make a tentative plan for planting this coming week with the students, I drive Kit back towards the main area of town. I let him know that I appreciate the hard work and time he puts in, giving up both of his weekend days to school preparation. I am not sure that this is recognized, but it is the hard work and care he gives to his work that bring the school mission to life. To me it reflects his commitment to holistic learning and the hopeful vision that is unique to Desert School expressed in his intentions. Csikszentmihalyi (2013) explains that creative people are usually both caring and sensitive and “they love to make connections with adjacent areas of knowledge” (p.10). Even in these out of school moments, I see the expression of his artistry and creativity as *open-hearted connection* and *imaginative diligence*. I ask him how he feels about ecological project-based learning so far, if there has been anything that’s been really memorable. He looks out the window and nods thoughtfully. “You know, it’s quite general, but I’ve always enjoyed the moments at the end of a project when the thing becomes a reality, when the thing that we’ve idealized about or designed and planned actually comes into existence. That is a really, really unique part of project-based learning, that things come into existence that weren’t there before.” I recognize the emergent element of artistry in teaching Eisner discusses. “Teaching is an art in that the ends it achieves are often created in the process,” he writes, “[f]ound in the course of interaction with students” (2002a, p. 155). I let Kit’s thought hang in the air, not wanting to diminish it with a flippant response for the sake of talking; so much of what he’s said is true for me too. So much about what we are trying to do is grow something new where only yesterday there was only sand.

Expressions of the Pedagogical

The Fox Teaches Students to Look Closer

Mr. Kit is twenty minutes late to class when he finally swoops in. "I am so sorry I am late," he says, grimacing at me and the teaching assistant who had been managing the class in his absence. "Seems there is always something pulling my time and attention elsewhere."

Mr. Kit moves through the room, quickly circling from table to table, peering over shoulders but not saying much more than short "Alright," "Okay," and "I see we have started drawing." The sleeves of his button down are rolled up, as they often are, and he runs a hand through his hair as he surveys the class. "4J, please bring your eyes up here," Mr. Kit says, addressing his class by their formal enumeration. "I want you all to please look at me. Please join me at this table up front." He waits a moment as students rearrange themselves. "Thank you for making room for M. D, please move over just a tich so everyone can see. Great." Mr. Kit has his own sketch book open and on a clean page he begins a demonstration. The class, rambunctious and chatty only a minute before, watches their teacher quietly, giving Mr. Kit their full attention.

He outlines the shape of the plant, quickly and imperfectly. He sketched in a few leaf outlines lightly. "Am I pressing hard?" he quietly asks the class. "No," they softly reply, heads shaking in unison. "Why do you think I am pressing so lightly?" he asks. "So that you can erase easily," a student suggests in a whispered voice. "Exactly," Mr. Kit replies calmly. "It is okay to make mistakes or changes. Remember, observational drawing is about what you can actually see not what you think you can see." It sounds like they have done this before, or at least talked about it. Mr. Kit gives a few other pointers to get them started, “If you do not know where to start, try looking at the shadows. By making the dark bit around first, the other bits look lighter and the shape starts to come out.” Looking up at the class, Mr. Kit interrupts the demo to redirect a student, “A, are you watching this?” A smiles, nods his head, and moves his attention from the friend he was whispering to back to the demonstration.

Mr. Kit continues, “If I want to really highlight a bit, like this shine on the leaf, I can take this” – he holds up a gray, moldable eraser – “and shape it into a point, removing some of the graphite of the pencil. See how that creates a nice white line?” “That is very good, Mr. Kit,” a student says. “Thank you, S,” Mr. Kit responds. “I want to be able to come up to you while you are drawing and say, ‘Where is that leaf? Why is it blue?’ and for you to be able to show me exactly where it is because you have looked so closely. Get to know your plant. Now, back to your tables and give it a try.” The students return to their original seats. Some flip to a new page in their sketch book. Others pick up where they left off. There is a hush in the room, punctuated by a few giggles. Mr. Kit makes his way around, asking questions or providing reassurance. “Why is that one blue?” he asks a student, who in turn points out the way part of a pennisetum grass actually appears more blue than green. When he speaks to the students, he kneels down next to them and uses a gentle voice. A few times he gives a secondary demo to individual students. “Remember, draw what you actually see,” he reminds students, “not what you want to see. What shapes are there? What lines? What details do you notice when you look a second and third time?” It seems to me that Mr. Kit is enjoying the opportunity to work with the students in this mindful way. He encourages them to use and stretch their perceptivity, while encouraging them to connect with their plant – to know it exactly. There is an expression of open-mindedness and open-hearted connection in his attitude, this time for the plants as opposed to the people around him. “Draw what you can see, not what you think you see,” is his refrain, and he only gives the students the most basic demonstration of skills before setting them free to try it out.

I look around, as Mr. Kit continues to move through the room. At one point the children are so hard at work that the automatic lights turn off, and a student has to wave her arm to turn them back on. Everyone laughs. The sky outside is blue, with the tinge of yellow that signifies a sandstorm is on the way. The floor is splattered with paint. The assistants are standing to the side, leaning against the counters ready to help if needed. Suddenly there is someone at the door, looking for me. It seems I won’t be able to stay for the full forty minutes. Like Mr. Kit said, there is always something else pulling my time and attention elsewhere.

A few days later, a parent stops me in the hall to tell me about how their child has been drawing all the plants in their house, from the moment they wake up until they go to sleep. The parent expressed wonder at the attention the student expresses for their drawing, the detail they are able to draw out, and the resultant care they express for the many plants scattered across the house. Even days later, Mr. Kit’s lesson is resonating with this student, influencing the way they see and interact with the world (Dewey, 1934). In turn, it has affected the parent’s outlook as well; she suddenly notices the plants more as well, she tells me, and she has made time to sit and sketch with her child, something she hasn’t done since he was very little. There is a distinct sense of ecological integrity and artistry in this moment, and I can feel my own *hopeful vision* being realized slowly but surely.

The Fox Creates Deliberate Dilemmas

When I walk in class is already well underway. There must have been a schedule change. Mr. Kit is seated on a table in the back of the room, one leg crossed over other. His foot is propped up on a chair, and he is a little backlit by the light streaming through the floor to ceiling windows. Around the classroom students are seated at tables, on tables, and in chairs. One student is seated backwards in his chair. There is an engaged calm to the room. Some students are looking at Mr. Kit and listening intently. Others are sketching quietly with dry erase markers on the whiteboard surface of the table, an ear cocked to the discussion. There are no side conversations, and several students have their hands raised, waiting to join the conversation. This is a common scene in Mr. Kit's class. As I experience it, he has created the calm but engaged atmosphere he intended to create. Students seem truly connected to what they are learning. The way he presents challenging information in imaginative ways encourages his students to take risks and actively engage (McConnell Moroye & Uhrmacher, 2018). On the smartboard at the "front" of the room – though in this case all students have their backs to it – is a set of slides outlining different "moral dilemmas." The one currently showing is a variation on the Heinz dilemma: a man is forced between choosing to steal a loaf of bread (morally unethical) or letting his family starve (also unethical). There is a picture of a loaf of bread in the right-hand corner of the slide. Along with the example, the slide reads: This is a moral dilemma because it is wrong to steal but his family needs to eat. He either breaks the law, which is wrong, or leaves his family to starve, which is also wrong." I can see that Mr. Kit has translated difficult philosophical language into something the children can understand, an intention he has explicitly stated several times in conversations.

Mr. Kit briefly turns to me and says, “Ms. Emily, we have been discussing different moral dilemmas. Can anyone explain to Ms. Emily what a moral dilemma is?” Several students raise their hand, and one student expertly explains that moral dilemmas are problems that don’t have one easy answer and require us to use different types of logic or philosophy to explain our reasoning. “Exactly. Thank you,” Mr. Kit says to the student. It’s hard to miss the feeling of unconstrained curiosity and mutual respect that permeates Kit’s classroom. Now that I am caught up, Kit brings the focus back to the discussion at hand.

“Now, let’s think about another way of making ethical decisions. This one is about happiness and the quality of happiness – what kind of happiness is it, how much of it is there? Does the happiness created by making one sort of decision outweigh the suffering?” Mr. Kit reads the prompt from the slide, with a picture of JS Mills reading a book is in the left-hand corner. “Here is an example:

> Let’s pretend we didn’t clean up. Then, the cleaners would have to stay even longer after school and miss out on family time and other activities. There are more of us than there are cleaners, so more people would be happy, but would we really get that much joy out of it – out of not cleaning up? Would we get that much joy out of it that we can justify their suffering?

Right away students offer ideas: “Well, if it was to go play football that we didn’t clean, there would be a lot of joy,” one student, a soccer aficionada suggests. “Yes, but it would take all of us such little time to clean up a bit, that we would lose very little recess time, so we would still get a lot of joy,” counters another student. And still another says, “They are the cleaners. It is their job to clean.” Mr. Kit listens but doesn’t offer much, just letting them think it through for a few minutes, students going back and forth. One student, T, dominates the discussion, and Mr. Kit reminds him to let others speak. As students offer ideas, Mr. Kit moves around the classroom. He now stands leaning against one of the bookshelves, one foot tucked in front of the other, hands clasped lightly in front of his chest. He is off to the side of the room. Some students also move about the room, swapping seats or simply standing behind a large U-shaped table. There is a comfortable sense of community this classroom.

Mr. Kit uses a lull in the conversation to move on to another situation without offering his own opinion of the cleaner/joy dilemma. “Okay, now we have another moral dilemma to sort through. Here are your options…” Once again, Mr. Kit reads a moral dilemma from the smartboard. Excitingly, he has not just taken any old moral dilemma from a website. He has chosen to rewrite familiar dilemmas to make them more place-based and relatable for the students, encouraging *open-hearted connection* to others as well as this place in a subtle way. Recently the students took a trip to a local chocolate factory to learn about the process of sourcing and making fair trade chocolate bars, and the dilemma he shares reflects that experience.

“If the factory makes enough chocolate to complete a huge order, everyone (100 people) who works there will get an extra 500 pound paycheck. To make sure the order is ready, one person must work over the weekend. Here are your options:

1. Mike: he has plans to take his family to the beach for the first time in months as his daughter has been sick.
2. Sarah: Sarah had planned to drive to Nearby City to visit an old friend she hasn’t seen in 20 years.
3. Connor: Connor is supposed to perform in a concert that he has worked very hard for.
4. Nobody works, and they don’t complete the order.

Who would you choose?” he asks, pausing for students to respond.

When no one offers an answer, he asks again. “Who would you choose? If you would choose Mike, put your hand up, and let me know why.” This more directed question seems to flip a switch, and several students shoot their hands in the air. “Um, T,” Mr. Kit chooses the student who has been dominating the conversation, but who also seems most excited to speak. Why would you choose Mike?” T replies with a slightly mixed up answers and gets frustrated in the process as he realized his misunderstanding. Mr. Kit assures him it’s okay and encourages T to rethink his response now that he better understands the option. T quickly puts his hand up to offer another suggestion.

Mr. Kit moves to the back of the room and sits down. He mindfully calls on different students, pausing in between responses to let them chat among themselves. Every time he calls on a student, he looks directly at them with full attention. His legs are crossed, and he has a hand on one knee, tapping out a pattern absentmindedly. Several kids are standing up, sitting on tables or moving around a bit, though listening. The student who is currently speaking stumbles on several English words. Like many of the students in this class, she is an English language learner. He doesn’t correct her but lets her find her way to the word she needs, giving her time to talk and keeping his eyes on her all the while. The students in the class give her the same attention. “Oh, nice!” he says in response to the student’s logical proposition. Another offers a comment. “You’re right, the beach might be too much,” he nods thoughtfully.

After another minute or so, Mr. Kit invites the students to get into small groups, reread the options, and come up with a group decision. Mr. Kit roams around the room chatting with students and often kneeling down to meet them at their level. When they come back for a deeper discussion after a few minutes, students share their responses. As it comes time for the class period to end, Mr. Kit starts to wrap up the conversation.

“So, have we come to one answer?” Many of the students shake their heads. “What was this like, trying to solve a moral dilemma?” “Hard.” “Confusing.” “Right,” Mr. Kit confirms. “That is exactly why it is a dilemma, because there are many options and no easy answers. We will talk about this more during our project as we learn about chocolate, ethics, and sustainable decision making.” He starts to get the class organized for lunch, having them wipe down their boards, clean up their tables and line up at the door. Having fed the mind, it’s time to feed the body.

The previous vignette captured a moment in Mr. Kit’s class during a project oriented around sustainable decision making. With his interest in equitable trade and philosophy, Mr. Kit created a unique experience for students to learn about philosophy through practice examples and open dialogue. After watching this session, I asked Mr. Kit about his intentions for the lesson. He explained that one student, T, had a personal learning goal of wanting to better understand philosophical ideas. Mr. Kit, also a philosophy enthusiast, decided to create an entire lesson for this student which would also help him introduce the complex idea of ethical decision making to the rest of the class through examples applicable to their life experiences. Mr. Kit artfully and creatively embraced this opportunity to create connection, share a bit of himself, and challenge students to think about their relationship to the world around them.

The Fox Finds A Home

Mountains rise around us, and large cloth tents are spaced evenly on both sides of the campground. Students are lugging sleeping bags and backpacks stuff with clothes from the buses to their assigned tents. The teachers are milling about, peeking in on students as they get settled in. I am trying to put together large telescope in the middle of a clearing outside my own tent. Mr. Kit walks up to put his own items away in the shelter next to mine. He joins me at the telescope and helps me to hold it steady as I tighten the bolts holding the lens onto the tripod. He is looking around, down the valley, up at the sky, and far off into the distance. “I didn’t know how much I needed this,” he repeats a few times. “I didn’t realize how much I missed nature, even if it’s not green like home, but it’s nature. It’s so different from the concrete jungle of Desert City. Even the air is different.” He seems relaxed and happy, even with a class full of nine-year old students in the middle of the Arabian Desert. Like most of us in Desert City, we long for moments of wildness and a break from the city lights. “I know,” I say. “I have been looking forward to this, having you all out here, getting away from the business and into the mountain. Just wait until the stars come out.”

When they do and the night grows cold, Mr. Kit and the other teachers herd the students into their tents for bed. As the students settle into their sleeping bags, they bump and rustle trying to get comfortable. Suddenly Mr. Kit whispers to the boy’s side of the camp, “Who wants to hear a bedtime story?” There is a chorus of “Me” from inside the tents, and Mr. Kit situates himself in between the two tents. He clicks on his headlamp and starts to read. I leave him with the boys to check on the girls’ side, where the other teachers are helping them get situated for the evening. With everything under control, I take a seat at the center table.

I organized this entire trip, and now it was unfolding just about perfectly. Today was my birthday, and I was lucky enough to spend most of it with Mr. Kit’s students.

While rock climbing, they made me a rock card, collecting grasses and smearing them on to a boulder to write HAPPY BIRTHDAY MS. E. At the moment, I had nearly cried. Watching Mr. Kit read to his kids as they fell asleep, I saw not just a teacher doing his job, but a *large-hearted* being willing to share himself with his students, *connecting* with them through stories and music and challenging questions, some of his favorite things. Now, out in the desert mountains, he also got to share his love of nature in his students in this unfamiliar place. It might not be green like his home in England, but for the moment it sure felt like a good place to stay.

Descriptions of Ms. Tanya AKA The Big Horned Sheep

The first time I met Ms. Tanya was at the temporary office before the start of the school year. She was wearing a green ankle length dress and black flats. She was kind and straight forward, making direct eye contact and smiling genuinely. I was left with a sense of her capability and experience, as well as an enthusiasm to join the team and an openness to learning. When I first saw her working on planning, I noticed she worked alone, with her head down, quickly and efficiently filling in each subject with the appropriate National Standards to support her first project. When I offered help, she replied in a way that suggested she'd rather go it alone. I was struck by her diligence. Flipping through photographs from the school year, I came across an image of Ms. Tanya a few days before the opening of the school year. In it she wears a purple dress covered in flowers and strappy gold sandals. Her hair is clipped neatly back from her face, and that face radiates pure joy. She is "testing" some of the new play equipment, a yellow two-seater three-wheeled tricycle sized for a four-year old. Her hands grip the handles, and her feet are held up off the ground as she zoomed around, offering other teachers a ride, alluding to the playful approach I often observed in her teaching. “I am not strict,” she said during our initial interview. “I want the kids to be happy. I like to think that if the kids are happy, they will learn better than if you try to scare it into them. I like to teach in a firm, but informal way.”

When I asked her to describe herself as an animal, she almost immediately offered up Big Horned Sheep. “They are feisty, they stand up for themselves, and they have a big rump!” she wrote in a text. From an ecological perspective, I would add that the big horned sheep are well adapted to climbing steep and rocky terrain. They are more agile than their size suggests, and I have watched them leap between mountain peaks without a second glance, like Ms. Tanya who was often quick to take a risk, letting her experience in teaching and expertise with the ENC pull her out of any rough patches. I chose Ms. Tanya as the pseudonym for this participant because of her choice of animal representative, with a particular nod to their common habitat – the mountains, or montañas, of the Western United States. Of the three thematic dimensions of ecological expression, she most often embodied imaginative diligence and deliberate spontaneity, which matches well for a creature that is both ingenious and hard-working.

~Ms. Tanya, Part 1: The Sheep in the Garden~

The Sheep Expresses Her Intentions and Expectations

“Hello? Helloooo! Is anyone there?” A voice cut through the quiet of the garden and startled me from the deep calm that comes only early in the morning, when the world is just waking up. I sat up and brushed sand from my hands and face. Lately my evenings have been spent in a fugue like state where sand rained down from the sky and Lalo played hide and seek with her shadow in the corner of my mind. In this moment, in the clear blue of midmorning, Lalo was nowhere to be seen. I sighed heavily. For almost a year now, I had been working tirelessly on designing the school curriculum, having meetings with architects and engineers, and consulting with landscapers. Now, building this garden in the middle of it all, I felt drained.

"There you are! Buddy said you might be off roaming through the desert, looking for rare birds or something like that." As she spoke, she unfolded a small table. She rolled over two large stumps from the wood pile and shook out a beautiful tablecloth covered in bright flowers and twisting vines. "I thought this tablecloth appropriate for an ecological school. In the middle of the desert we can use all the color we can get."

The benefit of being annoyingly organized. As she pulled out an assortment of biscuits, fruits, roasted potatoes and boiled eggs from her bag, I admired her ankle length dress, flowing around her in a shining green fabric that shimmered with life as she moved. "I hope you don't mind that I brought breakfast. I am very organized, maybe annoyingly so. My teaching partner would say that for sure," she laughed. Ms. Tanya was one of the most experienced teachers at Desert School, and I often saw this experience translated into efficient systems and routines that allowed her to stay focused during any new project. Her repertoire was full of ideas and experiences that saved her energy and time (Eisner, 2002a). Other might have found it annoying; I recognized it as an important aspect of artistry: being prepared (Csikszentmihalyi, 2013). Eisner noted that having a repertoire of routines to draw from is part of what allows a teacher to be artistic. "Without automaticity and the ability to call on stock responses, energies are lost, and inventiveness is hampered" (Eisner, 2002a, p. 155). Ms. Tanya reminded me of this idea when she said, “I always plan ahead, even if it means replanning. I’d rather do that than go in blind. So, food. And coffee. And tea. Do you take milk?” I laughed and moved to join her at the table.

Developing an ecological point of view. “Thank you. This is really so kind, so thoughtful. You must have worked hard to prepare this all,” I said. “That’s just part of my role here, I suppose: to get stuck in, to remain positive and consistent. To relay the message from above and get everyone on board – I mean, it is not always easy – but I think that as a teacher and leader at Desert School, my job is to deliver what we are selling, that we are teaching the kids to think about sustainability from an ecological perspective –” she cut herself off to explain the origins of the food: locally roasted coffee, locally grown eggs, tomatoes and potatoes, handmade biscuits. “What was I saying…Yes, we need to help them think from an ecological point of view. I think I do it most of the time, I do, but there is only so much I can do, only so many hours in the day, but on the whole, I think I am doing it right.” There is was: the press of time alongside her expectation of having to be thoughtfully *responsive in her actions*. I could see that Ms. Tanya thought of Desert School as a work in progress, both as an institution but also for herself as a teacher learning to do ecoPBE. For most teachers, time is often a limited commodity in schools. For new schools trying out new approaches, like sustainability education or place-based learning, time – to learn, to grow, to reflect – is pivotal in supporting change within the “robust institutions” of education (Eisner, 1992). As Hodgkinson (2011) wrote with regards to school reform for sustainability, “school reform is not just simply coming up with new ideas and then working to implement them. It’s about transformation…It’s also about building a capacity for change while anticipating and addressing the factors that often inhibit meaningful reform." At the heart of any ecological system is the need to learn and grow from our interactions with our environment, to be responsive and resilient. I heard Lalo yelp in the distance, and I wondered what trouble she was getting into.

I listened to Ms. Tanya as she continued to talk. "I've tried to read more about ecoliteracy because I am not very well versed in that at all, so I'm trying to get my head around it even though I am tired. I still have a long way to go, so…" she trailed off and for the shortest moment sat completely still. Ms. Tanya, like many of the teachers, often expressed the need for the teachers – herself included – to develop greater ecological knowledge and understanding of sustainability science. On their behalf, I regularly requested more time for professional development, which was not granted until three weeks before the end of the school year. In our final interview she noted that since I left the school there has been no professional development related to ecological literacy or sustainability education, nor have they received any additional support. I was disheartened by this, as was Ms. Tanya. Like time, teacher ecological knowledge is another important driver in bringing ecological and place-based education to schools (Liu et al., 2015; Pe'er et al., 2007; Puk & Stibbards, 2012; Timur et al., 2013)

Fed through everything. "Is that what brought you to Desert School then, the ecological focus?" I asked, hoping to learn more about her path to this moment. "So, I've been teaching for six years," Ms. Tanya began, counting the years off on her fingers with her eyes partly closed as if double checking. "This is my seventh year. I have been in management since my second year of teaching. At my last school, I saw all sorts of management change, inconsistences, lots of unhealthy chat, so I was ready for a change and wanted somewhere different, not just another box standard school. I had heard about this school, so I put in an application. I was ready for a change, open to it. You know, at my old school it was all English National Curriculum and topics. During the interview for Desert School, there was such a heavy focus on sustainability and ecoliteracy, it was clear that was the underlying foundation. And as I learned more about the school and the fact that sustainability and ecoliteracy were going to be taught from within the school and not as a separate topic, that it would be fed through everything that we do…well, it seemed genuine, not just a fad or something to sound cool. It sounded like it would be done properly." Done properly, *holistically* and fully integrated, I thought to myself. "So many other places say that they have an eco-focus, but it is only for one day or week a year. Here we are expected to teach the kids about the environment, and we are left to do it through projects and the eco focus. I like to think we are shaping the kids and their knowledge of the world, their take on things. It's really cool."

From this dynamic answer to my simple question I inferred that, like Mr. Kit and myself, the *holistic and connected education* presented by Desert School was what drew Ms. Tanya to Desert School (Orr, 1992). That, and the chance to create big change, not just in her own life but for education and the world.

Giving them the best. Tanya stopped to take a sip of coffee from a mug she pulled from the air. She motioned to pour me a cup as well. I nodded and asked, "Do you think we will be able to make it happen?" "Yeah, definitely. I think there will always be more to learn, at least for me, but that is part of teaching. I think there sometimes will be a battle with the English National Curriculum and the project-based approach, and how we marry them up. I think I'll have to keep asking myself questions, making sure I am doing things correctly because what we are trying to do here at Desert is so different from the typical British school. I know how to teach the National Curriculum, no problem," she said, waving her hand dismissively. "That's fine, but it is making sure that I am doing right and delivering what we are selling, so to speak."

I was inspired by her passion and drive, her *hopeful vision* for the school, as well as her realistic take on it, all laid out in front of me next to breakfast. Csikszentmihalyi (2013) writes that creative people "alternate between imagination…at one end and a rooted sense of reality at the other" (p. 63). "Have you gotten enough to eat?" Ms. Tanya asked as she began to pack up the remaining fruit and biscuits. "There is never enough time to do everything that you want to do, and we have a lot to do. I don't want the kids to come out and have not gotten the best that they can from the projects and spaces like the biomes and gardens." I couldn't help but think of a strong mountain goat leaping nimbly up steep mountain passes and pushing boulders out of her way to her destination.

Over my time working with Ms. Tanya, I watched as her intention of a hopeful vision grew from what first felt like a basic idea to something that she fully embodied in her teaching philosophy. Months later, in our final conversation, Ms. Tanya expanded on what she meant by giving kids the best. "It's about making sure that they are prepared as possible for the uncertainty that we are all facing in this day and age. It's going to set them up to be good people. We can't ignore sustainability; it is relevant and prevalent. But if we can teach the kids to recognize that what they see here [in Desert City] is wrong, they can make different choices. I know it's hard, but this is part of why it's so important to do this sort of work, even here, to teach another way is to get kids thinking differently." I found myself inspired at the impact that trying out this type of teaching had

had *on Ms. Tanya*, not just the students. It seemed that her intention to create a uniquely different sort of schooling, through ecological place-based education, had penetrated well below the surface.

Growing personal ecological knowledge. Ms. Tanya rummaged through a large bag full of garden supplies. I looked in and saw a watering can, several trowels, seedling trays, shade cover…a garden hose! Her perfectly smooth ponytail swishes back and forth as she pushed her arm further into the bag. “I know they are here…” she said sternly. She wasn’t kidding when she said she was organized. She finally pulled out yet another bag and started unpacking the contents. Packages of seeds filled the small tabletop: cucumber seeds, runner beans and bush beans, okra, coriander, basil, spring onion, leek, corn, tomato, pumpkin and squash…marigold, cosmos, sunflower, gazania…vegetables, fruits, and flowers of every color. “Also, these,” she added, plunking a bag of potatoes sprouting eyes down on the ground. “They went off in my kitchen. I read that you can plant them?” she said, a question running through her statement. “And these. From Buddy’s wife.” She placed a small potted vine in the center of the table along with homemade packets of chilis, mustard greens, and lettuce seeds.

“I think what I really need to develop is more of the ecological knowledge. I am okay not being an expert, but my knowledge of plants and how to care for them is quite limited,” Ms. Tanya said this, then looked at me expectantly. “I can definitely help with that, but how do you think that would that impact your teaching and learning?” I asked, wanting to better understand her intentions.

“It would probably mean when I am planning a science aspect or…um…in terms of when we are looking at sustainable areas, I would feel much better prepared for the why questions. I'd be better prepared to talk with the students about where we get the plants from, how they grow. I know I am not a fountain of knowledge, even if I like the kids to think that!" She laughed at this idea, then continued. "Sometimes I worry it is like the blind leading the blind…it would be nice to be maybe one step ahead. Then I'd be able to allow the kids more ownership. I think it's okay [if I don't know all the answers] as long as it doesn't get to the point where I think I haven't done my best by them. Uhh, there is so much to learn!" she exclaimed with a look on her face somewhere between excitement and dread. I realized that what she wanted was to feel more capable, to learn some very practical skills that would allow her to expand her knowledge and, quite possibly her *sense of ecological integrity*. I imagined her feeling as if her ecological artistry was in some ways limited by her lack of ecological knowledge. As Eisner wrote, "It is difficult to be pedagogically graceful when you are lost in unfamiliar territory" (1992, p. 611).

Getting stuck in. "Alright," I said, knowing exactly how to begin. "Step one: plant what you love." We began to look through the piles of seeds and choose the ones we were most excited to grow: things we liked to use in our own cooking, plants we knew the students would enjoy tasting, some things that would take time and be surprising, and things that would grow quickly and easily. This is also an applicable approach to place-based education. The teacher can find a way to enter into this unfamiliar field by identifying things they love or wonder about the place they teach, to use that as an entry point. The key is to start small and with something that engages a passion or interest (Anderson, 2017; Demarest, 2015).

“Step two: create a happy, healthy environment.” Ms. Tanya laughed, “Is this where we kick off our shoes and run around barefoot?” She explained, “Honestly, I thought Desert school would be a lot more hippyish.” I laughed out loud when she said this, and it seems to buoy her to continue explaining her expectations. “I thought there’d be a lot more people not wearing shoes and sitting around and meditating at random times of day.” I pictured Ms. Tanya, immaculately dressed, suddenly tossing her shoes in the trash. I had similarly thought the school would be a bit more “hippyish,” as she put it. I too imagined barefoot classes and teachers leading mindfulness session or playing outdoor games in every pocket of the garden, more masters of play and managers of behavior. I considered the fact that this was only our first year, and we were all finding the point of balance between our visions and the reality in front of us (Hammerness, 2001, 2004).

While Ms. Tanya and I didn’t kick off our shoes, we did build several raised beds from old pallet wood and laid down a walkway of found bricks. The arbor Mr. Kit had built sent new branches out in every direction, creating an area shaded from the harsh summer sun, perfect for lettuces and other greens. The day warmed, and the wind picked up, carrying heavy loads of nutrient rich, sweet red sand which found its way into the raised beds. We moved bags of compost and manure from stalled landscaping projects on far end of campus and mixed them into the sand anywhere and everywhere we wanted to plant. I talked Ms. Tanya through the process of transplanting seedlings and cuttings, and we tucked the potted vine from Buddy’s wife into the ground with a firm pat. Immediately it began to reach toward the sun, unfurling bright green shoots upward and outward. Tiny purple buds popped out from among the bring emerald leaves.

I showed Ms. Tanya how to plant squash and pumpkins in raised mounds, with a kernel of corn placed in the middle and beans planted around the outside in a sisterly trio. No sooner had we poked in the last bean when bright green shoots began to emerge from the center of the mounds with unstoppable force. I explained about companion planting and told her the story of the three sisters. I explained how peas and onions of any kind are not a good pairing, which I learned the hard way during one growing season, but how practically every plant benefitted from marigolds. I taught her that most seeds like to be covered with just about as much soil as they are big, and we dusted the lettuce seeds with sand, sprinkled the basil with dirt, and poked even more beans into the ground. I showed her how to gently pack in the compost of a seedling tray and to water it before pushing in the seeds. I explained the importance of providing just the right balance of support and safety, while ensuring room to grow. Ms. Tanya dove into all of it, and her green dress was soon covered in dirt and sand.

As we worked, I thought of Nel Noddings' quandary with regards to standards and aims in education, "If you are aiming for x, why are you doing y?" (2003, p. 83). What role do intentions and clear priorities play in improving teaching and learning? Ms. Tanya intended to learn, she expected this to be a work in progress requiring continuous learning and *responsive action* on her part as she learned to "do" ecoPBE.

Ms. Tanya's voice broke into my thoughts, "You know, I am willing to learn, and I think it is so important to not be so…work-shy like some people are. Ideally, we would only hire people who are willing to put in the time, who are willing to be a bit proactive in doing a little research, who are willing to – and want – to find out more. Having that mindset of being willing to learn and get stuck in…that's what will get us there. That, and time." She was expressing her willingness to work with *responsivity and action*, to not stay stuck in her ways, but to learn and try out this new way of teaching. Gruenewald (2003) suggests that this is all teachers need to do to get started with ecological place-based education: take a risk and try it out, put in a bit of hard work and see what emerges.

"That really is a big part of it, whether it is learning a new skill like gardening, or a new way of teaching, like ecological education," I agreed. As we continued to work, I weighed the need for depth of knowledge and preparation against the need for deep curiosity and diligence and found neither greater than nor less than the other, but perhaps they were the companion plantings of creative expression. Sure, more teachers with deep ecological knowledge and beliefs could help support the growth of ecological education in schools, but perhaps teacher-educators, like myself, could also turn our attention to cultivating cultures of curiosity and imagination with regards to developing teacher ecological literacy, instead of simply focusing on the lack of teacher ecological and environmental literacy as such a painful thorn in our collective side.

Reconfiguring accountability. Just before Ms. Tanya left, Lalo returned from her own daylong adventure, this time with a thorn sticking out from her ear. "Had a tough go?" I asked, pulling it out while thinking of our conversation about the limits of ecological knowledge and time.

"Who is this gorgeous pup?" Ms. Tanya asked. "I absolutely love dogs," she added as she bent down to meet Lalo eye to eye. "She is sort of like my guide dog," I said. "She nudges me in the direction I need to go, even if I don't know exactly where that is. She makes me laugh when I'm being too serious, and she gives me something to love and care for, even when I am exhausted. She keeps me curious. She reminds me that we are all connected and dependent on others, which I see as a key awareness we need to develop at Desert School if we are to realize our *hopeful vision* of *holistic learning*. Sometimes it seems like she knows what I am aiming for better than I do myself. She brought me all the way here."

"Seems like she keeps you accountable, like you keep us accountable, make sure we are addressing the ecological in the midst of everything else, pushing us a little further each project. We wouldn't get that without you," Ms. Tanya said. I smiled; this was my intention all along, not to become essential but to be one person nudging the teachers forward along this journey. But was accountability the right word?

Gruenewald (2005) has considered the way that accountability can be both a barrier and a strategic pathway for ecoPBE. Oftentimes, he writes, success within place-based education looks quite different from institutionalized measures of success: standardized test scores, reading levels, and "statistical comparisons of student achievements" (p. 265). What Ms. Tanya seemed to be alluding to was my attempt to rewrite the measures of success for both teachers and students within an ecological model of schooling with the Desert School ecoliteracy framework. This was my own *hopeful vision.* This framework, meant to guide teaching and learning, was offered to them as an alternative tool to assess and plan for successful teaching and learning that addressed the aims of ecoPBE. Ms. Tanya seemed to recognize that and was working to bring it to life in her practices.

We surveyed our work, admiring the way the corn stalks reached higher and higher in the fading light, their silk tassels sprouting comically from their tops. The watermelon planted around the arbor danced its way upward along the rough surface of the wood, and the squash and pumpkins were already spreading across the garden floor. Marigold seeds floated through the air, and anywhere they landed ants set to work hauling up the young sprouts. Ms. Tanya's intention to learn as she went was reflected in the garden unfurling in front of us. Unlike the supposed predictability of a "teacher-proof" lesson plan, teaching in the garden required us to set aside our need to predict and control, to measure and assess. Ecological place-based education, like nature, requires a bit of "uncertainty…to have its proper place" in our schools and for teachers to "work at the edge of incompetence" (Eisner, 2002b, p. 7).

We said goodnight, and I ate a bit of food Ms. Tanya had left behind, sharing the biscuits and potatoes with Lalo. I watered the new plantings one more time before giving my hands a good scrub. I boiled water for evening tea, but I couldn't remember where I had set down the container of mint. I went without. I made a fire, more for enjoyment than for warmth and sat for a bit to write and paint about the last few days. I made notes of where Ms. Tanya and I had planted which seeds, noting which had already emerged from the earth. I painted in a few insects to the plants and birds to the sky as wishful thinking.

I thought of a meeting with a member of the board who told me the stories of ecological growth weren't enough; we needed numbers - hours in the garden, hours in the ecodomes, who is using them most, who is using them least. When I asked how this evaluated the *quality* of the experiences, I was told that evaluation at this point was more a matter of accounting. It was about quantity, not quality; with the school building and grounds costing millions of dollars, each lesson taught had a specific monetary value regardless of how "good" it was. The thing is, this isn't how I think about the green spaces or education, like a financial transaction or a moment to be tallied on a sign-up sheet. I made a few notes about the thorn of disintegrated accountability in ecological education. Often ecological education, and the creativity it engenders, is pushed to the side when the focus turns to test scores and budgets, things that are more easily quantifiable (Gallup, Inc., 2019; Liebtag, 2019). Williams and Brown (2013) write that even “planting gardens alone is not enough. More important than redesigning the school landscape from sod to gardens is to redesign the mindscape: from domination to compassion, from competition to cooperation, and from mechanical relationships to ecological relationships” (p. 144). I closed my journal and lay down to rest. It was clear there would always be more work to do.

~Scars Across the Dunes~

That night I saw Lalo stand on her back two legs in front of a dark green chalk board with a mortar board on her head. She was conducting a demonstration on the sensitivity of plants to love and music, and as she lectured, the vines at the front of the room grew up and up and up, creeping along the wall, snaking out the windows, and twisting up the legs of the desks and tables. One grew so quickly it burst through the ceiling, letting sunshine spill into the room from above. Lalo made us measure the length and width of different leaves, time the speed of growth, and describe the progress of each individual plant in a large red ledger. My heart was pounding hard in opposition to this measurement and accountability. She kept tearing out the pages as we recorded, folding them into paper airplanes that she launched through the whole in the ceiling. We couldn’t keep up, and she started to bark and bark, until suddenly she wasn’t Lalo, but Buddy stuck behind a desk weighed down by crumpled paper airplanes. The man with the chameleon stood on a chair in the corner with his sunglasses on, stomping his feet to keep the vines from grabbing hold, his shoes and trousers covered in red sand. His mouth moved but it was hard to hear what he was saying. The keys of his SUV dangled from his hand as he pointed in every direction around the room. He stamped the seat of the chair harder with his feet, sending a rumble through the room. I called for Lalo, but she didn't come, and the vines kept growing, faster and faster. Suddenly I was in the middle of the desert, trudging slowly through sand, my feet feeling as if they were stuck in concrete. Large white four-wheelers raced up and down the dunes, leaving deep scars across the soft surface. I watched the sand jump and vibrate as car after car emerged at a sandy crest then dropped down into the valley below, kicking up clouds of dust in their wake. Lalo was one ridge over, a wild look in her eye, and she was barking furiously. This way, this way, follow me! She seemed to be saying. My feet were no longer made of lead, and I felt light and ready. Follow me, she barked again, and I was off and running in the only direction that made sense.

Ms. Tanya, Part 2: The Sheep in Action, Expressions of Structure

As I watched Ms. Tanya throughout the year, I was regularly both impressed and surprised by the way she continually developed her skills as an ecological place-based educator through project-based learning. In many ways I saw her draw on her previous experience as both a classroom teacher and teacher-leader to help her make sense of a confusing situation or set up systems that supported creative play. She was often the first to try a new planning template or move a classroom experience into the outdoors. Just as important to a school in the process of becoming, she was always ready to give thoughtful feedback throughout the year. During the initial interview and through follow up conversations, Ms. Tanya reflected with me on her growth throughout the year. At several different instances she recalled some of the more defining moments of the year for her personal and professional development. When I initially asked her if she considered herself an ecological educator, she responded, “I think I am more of one now seven months down the line than what I was in August, yeah. But I definitely think I would say that I definitely am still not there yet.” Below, I present two vignettes: my description of her classroom and one that I believe propelled Ms. Tanya forward as a project-based ecological educator. These vignettes highlight the systems and structures, including the explicit design and use of classroom and campus spaces, that impact her experiences as an ecological place-based educator.

The Sheep Has Expansive Ideas but A Blocked View

I sit in the back corner of the room, listening, watching, sketching, and making notes. Ms. Tanya stands in the front, right corner of the room, near a small elevated desk that holds her laptop, a stack of post-it notes, a bottle of perfume, her portable coffee mug, and a large water bottle with a flip up straw. Taped to the wall behind her computer screen is an improvised teacher planning board. Her weekly lesson plan outline is posted there, along with the “long term” planning documents organizing the driving question, key concepts, and English National Curriculum standards for the current project, *How Animals Work*. Her planner lies open, partially covering the keyboard of her open laptop. Having sat in myriad meetings with her for months now, I know there is a running list jotted down the planner page, with some items crossed out and others underlined with urgency. Ms. Tanya is a hard worker and meticulously organized, both of which aid her in adapting to ecological place- and project-based learning. At the same time, she is incredibly imaginative in her experiments with ecological place-based education.

I bring my focus to the smartboard. Words selected from the mandatory spelling list for Year 3 and 4 are posted around the edge of the black rectangle: mention, occasion, notice, naughty. I think back to something the Ms. Tanya said during her initial interview. As we sat and ate, I asked her what the phrase “all education is environmental education” meant to her and how it played out in her classroom or at least what she would like to see for education with this idea in mind. She responded, “I think it definitely should be [included in education], whether people like it or not they should be aware of [the environment]. It [the lack of ecological education] comes with people being ignorant or that ‘I’ll be dead by the time it happens so I don’t need to worry,’ or that ‘I’m fine so I don’t need to make any changes’…things like that…if they aren’t educated on the impact that we are having, then they won’t change their mindset. I think that sometimes I can’t always be [including it], because of restrictions we have regarding content and what we have to deliver, but it should be something that should constantly be running through.”

“What are some of the restrictions?” I had asked in response. Ms. Tanya set down her coffee and used her fingers as if to count off a bunch of things. “Kids have to know these spellings, or this grammar, and I was saying to Frank (her teaching partner), that we are almost at that awkward stage where kids don’t need to know how to divide because they have a calculator on their phone; they don’t need to spell because they can ask Siri. Why do we have to take so much time to learn 200 spellings when we are at this stage when something like 90 percent of jobs that our kids are going to do don’t exist yet.” She is referencing the 200 words year three and four students are required to memorize in the

English National Curriculum. The words around her smartboard are just a few included on this list. She continued, “And still…we are teaching them skills that are arguably no longer relevant. Take B for example. He’s written over four pages of a story he is in love with, and none of its in cursive. The students are supposed to write in cursive. I am not now going to rain on his parade and make him write it all again, or he’s not going to want to write.” As I observed her room, I recalled this conversation and her frustrations about feeling “restricted” with regards to what she had to teach versus what she believes is important in a changing world, and I wondered what else in her room is there only because of structural obligations, as opposed to her own professional intentions of “giving them the best.” She is not the only one who has critiqued the robust structure of the ENC with regards to ecological and sustainability education. In discussions with several of my peers throughout my research, they expressed incredulousness that a British school would attempt this sort of teaching, stating that they thought the curriculum standards were too limiting and restrictive. Scholars have reported similar lack of full integration of the ENC and ecological and sustainability education because of this very element over the nearly forty years since environmental education was introduced as an element of the ENC (Chatzifotiou, 2002, 2006).

There are recycle bins at the front of the room, blue for paper, yellow for plastic, and a wire basket overflowing with trash for everything else. There is a laminated timetable, approximately six feet long, organizing the daily schedule into chronological order from start to picture with small pictures showing each activity. Whereas I may have glossed over this artifact previously, I am staring at it, transfixed. I remember something Ms. Tanya said during our first interview, when I asked her if she wanted to elaborate on what she considered “structurally constraining,” as she put it. “Oh, I was joking about that the other day with Frank. We have a visual timetable, and it is longer than he is tall. Our timetable is longer than a 32 year-old man! This probably needs to be sorted! I find that you say [what is structurally restraining] and, I don’t know who is in charge of that, but whoever it is really doesn’t care, because it hasn’t changed.” Her frustration is palpable and understandable; she wants to be able to be *imaginative as well as deliberate,* but the schedule often means she has to stick to the timetable. Ms. Tanya, like her animal namesake, stands up for herself and regularly speaks her mind. She is most direct when it comes to expressing what she needs to best support her students, but she is clearly feeling unheard. The timetable doesn’t work for her, that much is clear.

She is not the only teacher to complain to me about the timetable, how the way the day is organized does not support ecological learning or place-based exploration through projects. It is too fragmented and inflexible for many of the teachers; it stifles both their *imagination* and their ability to be *deliberately spontaneous*. Despite my efforts on their behalf – because of my own experiences with project-based learning – I have been unable to get the board, principal, or head of primary to rethink class lengths or timings. If there is one thing that ecological learning benefits from structurally, it is having a schedule flexible enough to support spontaneity and responsiveness in teaching. If there is one thing that is consistently difficult to reconcile or reimagine for many administrators, it is the traditionally structured school day consisting of quick sessions, numerous transitions, and subject oriented organization. At Desert School, teachers worked within forty-minute blocks, which they often described as just enough time to really get into the days lesson before having to clean up.

Next to the visual timetable the door stands open, propped inwards. There are pictures of students on the door welcoming visitors into the room. There is a table with drawers holding necessary supplies: rulers, markers, erasers, scissors, scrap paper. Above the table are two large cork boards. One is the Project Board, and it is covered with ideas and images from the current project. There is the driving question re-written in kid friendly language, “If I was an animal for a day, what would I do?” There are some of the key vocabulary: adaptation, evolution, environment, mammal, reptile, amphibian, bird. Everything is neat and tidy.

There is a counter with a sink running along most of the back wall. There is a bin full of water bottles next to the sink. Taking up a large portion of the counter is a hamster cage. The infamous Lola lives here, taken in by Ms. Tanya when a family left the country and their pets behind. The rest of the counter is clean and clear without any rubbish or stray papers. Ms. Tanya has set up a schedule of feeding and cleaning that ensures each student gets a chance to care for the classroom pets. This is directly connected to the ecological literacy framework strand of ecological mindedness and empathy. Her actions bring her intention of helping students develop an ecological point of view to life.

I look out in front of me and see the room is organized in the standard formation for the school. There are two gray hexagonal tables near the front of the classroom, a semi-circle shaped table with an erasable whiteboard surface towards the left rear, and a raised horseshoe shaped table with seating around the back edge, and an inset couch and circular table situated inside the horseshoe. Since the beginning of the year the teachers have been told by the Principal, who was told by the Board, that the furniture assigned to each room needed to stay in each room. They claimed that the furniture was specially designed for students of a particular age with developmental needs in mind. Since the beginning of the year, the teachers have expressed frustration with the lack of flexibility afforded by the big, bulky furniture, claiming it is hard to rearrange and alternately too large, small, uncomfortable or distracting for many of their students. For now, everyone just puts up with it and as a result the arrangement of equipment in most rooms is identical despite the eclectic shapes of the furniture.

The remaining wall is covered in project-work from past and current projects. There are detailed hand-drawn maps of the campus and posters of different ecosystems. A handwritten definition of “sustainability” is taped up. From the current projects, cut out images of animals are collaged under the headings “mammals, reptiles, amphibians, birds.” There is an organized but organic feel to the Project Work Wall, and I can imagine students pulling their parents over during pick-up or drop-off to look at their writings and drawings.

Passing the Project Work, the wall changes from painted drywall to a large double paned window, that looked out on to the Learning Garden. The view is lush with greenery. Today there is a strong wind blowing, and the full branches of the Albezia tree sway, dropping silky pink and white brush-like flowers onto the ground. I see a red-vented bulbul hop in the trees, most likely looking for a bit of fruit left by the head gardener. I watch as a few students glance up from their work as the wind picks up. Ms. Tanya turns her head away from the class for a moment, taking in a deep breath and a view of the garden. The wind continues to blow, and she turns her attention back to her class and goes about her day.

The Sheep Lets Adventure Arise

The day is slightly overcast as dust clouds the sky and diffuses the sunshine. The ecodomes are finally open and ready to use. I find Ms. Tanya and her teaching partner in the domes with their classes. As I check in with Ms. Tanya to better understand the lesson, the students spread out among two of the three domes. “As we discussed during planning, we are going to be using the ecodomes as the backdrop for the adventure stories the students will write and produce. They are out here today to explore the different environments in the domes and to start planning the adventure story they want to tell,” Ms. Tanya explains. “Their stories can be set in whichever environment that they think would be interesting.” There is a thoughtfulness to her choosing this space; it deliberately uses the campus, something she intentionally focused on in her planning, while also providing students with a wealth of possible experiences to shape their learning and film making; this lesson is a clear expression of *deliberate spontaneity* in action. I think back to the hopeful vision Ms. Tanya expressed during the initial interview. She said, “I think we need to be sure to make the best of the resources we have to inspire independence and happiness for the students, to help them develop an ecological mindset.”

I leave Ms. Tanya to check in on some students, and I wander around the domes. Students have separated into their adventure story groups. Some are quietly sketching, while others are animatedly talking with hands waving wildly. The shape of the domes means that some students are necessarily out of the teacher’s line of sight at any given moment, which can be both a burden and a boon. It can provide the sense of secrecy and simplicity of the “small worlds” important to child development (Sobel, 2008). At the same time, the domes provide the perfect opportunities for small-scale risk taking and trouble-making that come with thinking you're out of the teacher's sight. Some teachers have expressed to me, in surveys and in person, that they don't like teaching in the domes for this exact reason. For others, the fact that the domes don't come with chairs, desks, or at least comfortable cushions is a deterrent to them using the spaces.

Ms. Tanya does not seem to be bothered by either of these reasons, and she moves slowly and calmly around the dome, checking in with students as they work, pausing to work with a group that is struggling to stay focused. Her teaching partner sits on a log and listens to a group of girls describing their idea for an adventure film. "And then the lion will jump so high…" I catch a snipped of the conversation. One group takes a break from their planning to investigate the pond, wondering how they might incorporate it into their film. They are distracted by the caterpillars munching on the leaves, and a caterpillar hunting crew forms. The students collect a box full of caterpillars in a matter of minutes. "There's one!" "There's another!" "Look, they are like little explorers, too!" "I think I can hear them eating!" the students exclaim. "On caterpillar duty, huh?" she says, checking in with them to see how much progress they have made on their actual planning documents. She looks at her wristwatch, then back at their planning papers, and decides they can continue their exploration a bit longer. "Carry on. This looks like important work," she says with a smile to them and a wink to me. She seems comfortable knowing that the students have both finished the work assigned and are still curious to explore the space; she doesn't see the need to account for "time on task" or other structural concerns.

She continues weaving through the domes, circling around each before returning to the other, seeming quite comfortable in the space. I don't catch much of what she says, as sounds bounce awkwardly around the domes, and Ms. Tanya leans close to speak with each student she addresses. She lets them explore and move freely, the same way she navigates her own experience with ecoPBE. Toward the end of the session she calls for students to turn in their planning documents for safe keeping. She directs the Caterpillar Crew to collect their pages and hand over the captives. The students push the box full of fuzzy, wriggling caterpillars in my direction. “Alright. Form a line. We have work to do, explorers! Let’s go!” The students file out of the ecodome, following their fearless leader back inside.

Expressions of the Curricular

The Sheep Learns from Disaster

Ms. Tanya’s Year Three students were working on their shields for the ongoing project, “The Great, The Brave and the Bold.” I came in to observe the artist-in-residence, but a change in her plans meant a change for everyone. I decided to stay and watch Ms. Tanya while I had the chance.

The students had indeed started creating their shields using natural and recycled materials. The room was littered with cardboard, scraps of construction paper, red and gold metallic wrappers, sticks, leaves, old washers and spacers from someone’s garage, and strings and cords of every variety. As I surveyed the room, I found Ms. Tanya helping a child glue on a shiny piece of material to the front of their shield. The hands of both Ms. Tanya and the child were covered in glue, and I offered to help. “That would be great!” Ms. Tanya replied with a playful grimace and tilt of her head.

Even though I hadn’t planned to stay, I ended up spending most of the time helping children where I could and trying to clean-up as I went. I saw a main part of my leadership role as being supportive and nurturing to teachers as they navigated the unfamiliar landscape of ecological education. I knew full well the chaos that ensues when education veers away from the tidy printable activities and professionally designed lessons. Most of the time it is a sloppy mess before it turns into something beautiful.

Suddenly there was another teacher at the door, ready to pick students up for their next lesson. Looking flustered, Ms. Tanya asked them to quickly push in their chairs and line up. Her cheeks were flushed, but her voice loud and clear as she directed students to the door. The room looked as if a tornado had ripped through the space: the was glue spilled on tables, paper scraps of every color and size were strewn all over the tables and floors, bits of metal and leaves were scattered in piles around the room. A chair lay on its side on the ground, a casualty of the rush to transition.

As the students got into line, I continued cleaning around their shields. Once the students were gone, Ms. Tanya and I debriefed the lesson. “Well, they started it with Ms. Elle [the Artist-in-Residence at the time]. I thought they would take more time to design and organize their thoughts, but they didn’t.” I asked her if she could show me drafts the students had worked on before they started. She showed me a few, but they were poorly sketched, with few details filled in on the template provided by the Artist in Residence. There was no real scaffolding, other than a box and a caption saying, “Draw Your Shield.”

“So, how do you think it is going so far?” I asked. “Well…” she motioned around the room with her hands still covered in glue. “It feels a bit chaotic and messy. I know the kids are having fun, but I think the purpose of the activity may be lost on them. It’s sort of lost on me as well.” We talk about the shields: what are they to be used for? Props in the play they will write and perform; to address design and technology standards of using different materials for a specific purpose, as well as using research to guide design. “Do the students know that is what they are doing? How have they used research or specific criteria to guide their design?” I asked. “I’m not sure. I would have to ask Elle,” she said, and I made a mental note of the disconnect between the two. As we talked, I realized that Elle and Ms. Tanya had not communicated much before diving into this part of the project

“Did Elle provide you with any overview of her lesson before she carried it out?” I asked. “No, she just said they were creating shields from natural and recycled materials, and that she had to leave to go to another class.” While Ms. Tanya did not seem upset to have been left to pick up the pieces, I knew we needed to quickly make a plan to support the rest of the activity. “What do you think you would want to do next with this?” I prompted, knowing what I would do, but not wanting to take over or assume she didn’t know how to fix it herself. “I think I could show them pictures of old Roman shields, have them look for similarities and differences…Maybe research why certain things would have been included on a Roman shield,” Ms. Tanya suggested. I let out a big breath and smiled, admiring the way Ms. Tanya intuitively saw mistakes as opportunities for growth. Her openness to feedback didn’t hurt either. One reason I believe it is imperative to create open-hearted connections in schools implementing ecological education is to create a healthy ecosystem in which different individuals can learn and grow together, as we were doing in this instance. “That is exactly the right step. Bring it back to the project question and back to the goals. Have them do the research, then ask them how they can show what they learned in their design. Some peer critique can go a long way too. Try not to get too caught up in the shiny, flashy part of PBL without returning to the driving question and aims," I suggested.

Ms. Tanya nodded. "When do you think you'll be able to get to that?" I ask, knowing full well that Ms. Tanya keeps an organized schedule. "Over the next few days hopefully. I don't want it to get too spread out from start to finish so the kids don't lose interest." "Let me know how I can help. I know sometimes just having an extra pair of hands in the classroom during a project can be a big help." Not wanting to overwhelm her with too much attention or by getting too involved, I continued to help clean up, then briefly said goodbye. Even I was figuring out my role in this place.

A couple days later, Ms. Tanya let me know that they were critiquing their shields, and I was invited to join if I could. When I entered the room, I saw a reflection of new found artistry expressed through *imaginative diligence*: pictures of ancient Roman shields on each table, and the students' unfinished shields were on the tables. Each child had a handful of sticky notes, and they moved around the room giving feedback to one another. Ms. Tanya had purposefully reshaped the activity to retain the creativity while meeting the needs of the students and the demands of the curriculum. At the same time students were creating work that was unique and beautiful. Students commented on the designs, or lack thereof, on their peers' shields. Some noted that they really like the geometric design. One student kept talking about the "boss" in the middle, a term he clearly learned while researching. One student simply wrote, "Glue better" on a post-it, and indeed the edges of the construction paper are already coming unglued from the shield. When I asked a few kids why they have used a certain design, they explained that it was a shape they like, or something the Romans might have used, like thunderbolts or the color red. One student is trying to remove the metal from the top edge of his shield so that he can use it in the center of the shield, his researching having revealed the reason behind the tough metal plate in the center.

After students have given and received critique, Ms. Tanya had them decide on one thing they wanted to change when the materials are passed out. She then called them up table by table to get materials from the assistant in the back of the room as needed. Some students only got scissors to do a better job cutting the edges. Some got glue, others tried to grab everything again, but this time the assistant and Ms. Tanya were better prepared, and they rationed and rationalized. “Why do you think you need so much foil? How can you make sure you don’t waste it like last time?” The session continued like this as students made small changes or even major overhauls to their shields. One boy pulled off every piece of metal he had glued on originally because he realized the design wouldn’t have been helpful in defending against attackers. Before the end of the period, I moved towards door to leave. I look around the room, noting the organized chaos and a teacher notably less covered in glue.

I already saw progress and was impressed by the way Ms. Tanya made quick, responsive changes to the project over the course of only a few days. Even though the first attempt was chaotic and possibly a bit of a disaster, she paused, reflected, and responded with imagination and hard work. Using systems that worked for her in the past combined with an openness to trying to implement some of the suggestions I offered, she allowed a structure to emerge that supported students in creating a more meaningful experience by connecting their playful excitement for the messy activity with purposeful inquiry and creative design. As for me, I was also learning on the spot, responding to teachers with equal parts experienced thoughtfulness and imaginative resourcefulness.

The Sheep Creates a Moment of Accidental Artistry

The experience described in the following vignette encompasses, I believe, the richness and complexity of ecological artistry. From within this foundational theme, the three other themes emerged in one experience: studied spontaneity, imaginative diligence, and openhearted connection. Additionally, this vignette illuminates the interdependence of the intentional, curricular, and pedagogical in a moment that was transformative – quite possible an aesthetic experience – for Ms. Tanya as an ecological educator. In further research, it may be interesting to examine the role of aesthetic experiences for teachers in ecoPBE.

It is the end of the day, and the halls are quieting down. The steady flow of parents has slowed to a trickle of late comers walking with focus towards their child's classroom, knowing they have kept both the teacher and their kid waiting. As I walk down the hall, greeting parents and making small talk, I also try to peek into the classrooms to check in with teachers after a long day. I poke my head into Ms. Tanya's room, and a riot of colors catches my eye. I turn my head and let out a delighted laugh.

Ms. Tanya, who stands near the front of her room tidying papers and making notes, looks up at me. "Aren't they beautiful," she exclaims, her face glowing with pride. "They turned out even better than I imagined." Covering most of the wall are large, detailed pictures of plants from the garden shot in macro format. The images were obviously printed off in black and white, but the students have painstakingly recolored the photos with oil pastels and no detail was forgotten. The tiny white spikes along the edges of the aloe plant. The hole eaten through the stiff yellow and green striped tip of the sanseveria. The multiple shades of orange and yellow pulsing from the marigold blossom. Each artwork is a lovingly created masterpiece of perspective and personality. "These are phenomenal," I say breathlessly. "I want to hear all about how these came to be. Everyone should see this. Amazing."

Unfortunately, both Ms. Tanya and I had to rush out in that moment, but we eventually were able to carve out time to talk about this lesson during the initial interview. "Can you tell me a bit more about how you came up with the zoomed in garden pictures activity, sort of walk me through your thinking and the process of the—" "Yes!" she exclaims, cutting me off midsentence, and she begins to paint the picture with words. "That was a proud moment for me, because that was all me in terms of who did it and who thought of the idea. And to be fair, that was the first time where I felt, 'Oh, okay, maybe I am understanding what I am supposed to be doing here. Maybe this activity makes sense.' To be honest, it was very last minute. Ms. Elle [the artist-in-residence] had suggested something that didn't excite me, so I was like, 'That's okay. I'll go along with it,' but I didn't really want to do it. Then at the last minute she wasn't available, so I was like 'Great! I'm going to take my chance and do something that I really want to do.'" Ms. Tanya sits up straight in her seat, her ponytail swinging from side to side as she describes the experience with great animation.

"I love teaching art and science, as I've told you before. This was right at the beginning of the [Land, Sea, and Sky] project, and I was thinking, 'How can we get them to do something that they enjoy, but will excite them for what's to come in the project?' I wanted to get them doing some art using plants, but I wasn't sure how. And I didn't really know if I was doing it right in terms of the project-based learning." I take note of the expression of self-doubt that creeps in here. "We were supposed to do a drawing based on Ms. Elle's plans, but I didn't want to just sit and go, 'Okay. Here's a drawing. I'm going to show you how to do it.' Besides, I'm not the best at drawing. I wanted to get them actively involved. So, I was like, 'Right. Let's get them in the garden. They can take a picture, and we can describe, label, and color what we see.' Then I realized that we would just end up with a bunch of the same pictures of the garden, all colored the same…" She fades away midsentence and cocks her head to the side. It seems to me she is thinking about her thinking, trying to understand her process, so she can better explain it. She continues, "Then I thought I'll just go into the garden to see if it does anything to help me think it through. I got out there and while playing around, I accidentally zoomed in. Of course, you can see the details better and the texture, and I said, 'Let's do that,' – take a close-up picture of something in garden. I thought maybe I'll just let them go and see what happens. Then I thought let's print it BIG, and it went from there." In this moment I saw that her attitude of *deliberate spontaneity* – a playful yet thoughtful expression of artistry – set the tone for the rest of the activity.

"It took a lot of time…well, not a lot…but I had to use my lunch break to print them and blow them up large, but I knew that it would be worth it because if I left it a week, their excitement would already be gone. They were excited that they had taken photos, had ownership, so I did all of that. Even then [when I gave them the pictures] I didn't tell them what exactly do with the colors, but what they came up with was better than I would have even done. Again, it was one of those moments you go, 'Yea kids, yea!' They were so proud of their work. It was one of those buzz times."

All of this is shared with an enthusiasm and excitement I hadn’t seen from her before. It is clear that this was an enjoyable experience for her – just plain fun. I suspect one reason for this was that she had full control of her classroom. Teachers who have more control and who feel supported to be creative, are more likely to express their own creativity in practice (Diliello, Houghton, & Dawley, 2011; Liebtag, 2019; Miel, 1961; Niehoff, 2018). In this instance, Ms. Tanya was able to step fully into her role as classroom teacher and create exactly what she wanted for that lesson without constraints.

“Did you have any hopes for this experience when you were imagining it?” I ask. “I wanted them to look at things from a different perspective, to give them that experience, to see things from a different point of view, as I did when I accidently zoomed it. You could see more than you could before, and I wanted them to discuss the different [plants that they had taken photos of], and then use that to open up the discussion about different plants, and how you take care of them.” “Did that happen?” I wondered aloud, seeing her explanation as an expression of artistry in action, an attempt to invoke a sense of *open-hearted connection* inspired by her own willingness to take a risk and try something new in the garden. “Eventually. For some of them. Some needed more guidance. They still talk about those photos now. They took them home…the parents really liked them as well. It was a time that even the parents were like, ‘Okay, this is what they are doing.’ Before that I don’t think the parents got exactly what we were doing either. And that was the moment for me. I thought maybe this is what we are supposed to be doing here, like, I kind of get it now. You know in the first project, it was kind of topic based, and I was like it’s just topic, and Emily just calls it a different name.

But this was when I thought, ‘Actually it’s not, it’s totally different.’ That was, like, *the* moment for me.”

I nod and smile, relishing for a minute my own transformative moment, feeling as I were briefly floating above the two of us sitting and talking (Dewey, 1934). This sort of deliberately spontaneous teaching that supported holistic “education of a certain kind,” was what I believed in and tried so hard to encourage and support teachers to do every day (Orr, 2004). More than that, though, I felt the wholeness of the lesson, the way Ms. Tanya seemed to have integrated the idea of ecological place-based education into her teaching and understanding of ecological education with a certain completeness that left her, if only for this fleeting moment, feeling open, knowledgeable, and imaginative.

The Sheep Imagines a Red-Carpet Moment

I am sitting behind my desk when Ms. Tanya and her teaching partner, Ms. Holly, come into the office. I know they are here to do some planning for their upcoming project Explorers and Adventurers. We are all eager to get started as this meeting has been rescheduled several times already because of conflicts on my part. Ms. Tanya jumps right in, “Right. I was talking with Holly, trying to help her understand what we have already done this year, what has worked well and what we’ve changed along the way.” I nod in encouragement. “I really enjoyed the way that the students took ownership during the last project celebration, walking their parents around to their different plots, explaining what they had to do. And the parents really seemed to love it as well. For this project, we were thinking we could do something similar, where the students are really showing what they learned through the celebration, not just performing for the sake of performing, so….” She holds the word long enough to build a bit of momentum. “We were thinking we could have the students make adventure films then present them at a ‘film premier.” “Yes,” Ms. Holly jumps in, “Now that the Black Box is open, we can hold the premier in there, and we can all get dressed up and give awards.” “Maybe we can even get a red carpet to roll out,” Ms. Tanya adds, using her hand to unfurl an imaginary cloth. The two teachers look at each other with a giddy energy as they let their imagination run free. “Oh, I love this!” I say, “And that you two already have this thought through! This is exactly what I hoped would happen over time, that teachers wouldn’t wait for me to plan their projects! So, let’s just outline it for a bit of clarity, and to think through the pieces,” I said.

In a matter of minutes, we confirmed the Driving Question: Why do people explore? We also identified the sub-questions that will help structure inquiry: Who is an explorer? What skills and knowledge do they have? What roles do they play? What drives people to explore? How do they tell their stories? This is going more smoothly than any planning session yet. I can see that as Ms. Tanya becomes more experienced with place-based teaching, her imagination as to what is possible expands as well.

Because the teachers know they want to have the students make films, I suggest that we make a list of possible examples of exploration documentaries that could be used as examples, and quickly a list of adventurers is bulleted. We outline the big concepts that can be covered through this question, making direct links to the English National Curriculum for Year 3; the teachers want to cover map making, magnetism, aspects of light and sight like shadows, and narrative writing. From here we list out the likely skills, knowledge, and values that may be taught or experienced through this project, in a sense just breaking the big concepts down into smaller, more actionable pieces. Ms. Tanya is adamant that this project be designed to inspire their imagination and develop empathy for others, while also getting them to take risks and be curious, like an explorer. Feeling confident in the ENC targets she will be able to address in this project, Ms. Tanya and her teaching partner flesh out the more creative aspects.

The students will have to learn a lot of new skills for this project to really come together, and it is quite a big undertaking, but Ms. Tanya and her teaching partner are so excited. I ask if this will be entirely a group project, and Ms. Tanya quickly clarifies, "The film will be in one group, but they will each write their own narrative." We discuss how the students could work together to create an exploration scenario that they will film, with each of them taking on a different explorer role, and writing their narrative based on that persona. There are a lot of nods. The board is a flurry of colors when I finish taking notes. "Okay," I say. "The next step is to flesh it out, look at it across the whole length of the project. What needs to be taught first, so that the students can then do x, y, and z. What will you need to explain to them? What do you want them to experience on their own? Are there any lessons you are excited to carry out, but need to change a bit to fit this project? How will you use the campus? How can we engage them with some experts in the field?" These are the typical questions I ask teachers when we are working to plan a new project, but normally I have to walk them through this process a bit more. Ms. Tanya looks ready to run from her chair to get started planning, so I simply offer to reach out to a few explorers and film makers I know as I watch them bounce excitedly out the door.

In this situation, Ms. Tanya's organization as well as her willingness to get stuck in and learn, allow her to approach project design with the *imaginative diligence* that arises from the community *ecological artistry*. In the next vignettes, the *Explorer and Adventurer* project is brought to life more fully.

Expressions of the Pedagogical

The Sheep Picks Up the Pieces

It is early February, and Year three students are starting a new project. Earlier in the morning I saw Ms. Tanya and her newest teaching partner out hiding “treasure” as part of the upcoming scavenger hunt that will kick off their new project, *Adventurers and Explorers*. With Ms. Holly, Ms. Tanya has designed a treasure hunt that will take students around the school with the intention of introducing them to using maps in a fun way. Sitting in my office, I watch through the floor to ceiling window as Year Three students crisscross the playground, Ms. Tanya in tow, searching out hidden treasures. I can’t wait to hear how it goes. Through the window I watch Ms. Tanya throw her head back in laughter.

Later in the day I pop down to the Year Three hallway to ask how the Project Launch went. Ms. Tanya looks at Ms. Holly, and they both crack up. “You won’t believe it,” Ms. Tanya says. “We spent all this time setting up, making clues, providing good directions. We get started, and the kids are doing great! They are figuring out the clues and following the directions. We arrive at the first clue, and it’s not there! We know we are in the right spot, because I put it there!” Ms. Tanya and Ms. Holly are in stitches laughing now. “So, I say, ‘Right! You got to the right place, but someone must have taken the treasure!’ We head to the next clue, and it is there, then the next, then another is missing. As we cross paths we check in – the other groups are having the same problem. As my group heads to the next clue, I watch one of the gardening team pick up a clue and put it in the garbage! The kids thought it was funny that our gardeners are so good at what they do, we couldn't even do our schoolwork!" We are all laughing now, and I am thinking of how I have instructed the gardeners to do a walk around every morning, first thing, to make sure that the grounds are looking good for kids, parents, and staff. "Well done, Emily!" they say. Ms. Tanya continues, "It was okay though. The students got the idea, and we had a good conversation about how sometimes different people have different goals, or how explorers don't always have all the information they need but they still try! Too funny. I guess it was a real adventure!" Instead of seeing this as a problem or disaster, Ms. Tanya and her teaching partner flip the situation around and approach with *open-hearted connection*; they use it as an opportunity to deepen their relationships with their students and the school through laughter and play outdoors. So often the value of ecological place-based education is presented as if it is wholly predicated upon better test scores, higher student attendance rates, or improved reading levels, and yet for me the greatest value of ecological education in practice is the ability for students and teachers to connect with one another and the world around them, to develop a sense of interdependence and nested relationships that are pivotal to a healthy ecological system (Stone & Barlow, 2005). Gruenewald speaks of the need to make space for wholeness in our teaching practices. "Wholeness is not something that is valued in our modern culture where dualisms and the fragmentation of knowledge frame our educational experience" (Gruenewald, 2002, p. 533). Ms. Tanya, in making space to laugh and connect while also exploring the land around the school and not worrying about mistakes, creates an experience that is fun, exiting, and complete.

The Sheep Makes It Real

I rush the extra laptop over to Ms. Tanya's class. We are sorting out a technical issue at the start of what should be an expert volunteer's presentation. If the internet gods allow, the students will soon be talking with a real-life Arctic explorer, who also happens to be a documentary film maker. The students are currently working on their own adventure stories and have recently begun to outline the films they will create inspired by their stories. I look around the room. Each student has their project books open in front of them to their own unique list of questions. "We've been reading about explorers and we watched some of the film Eric made about his expedition to the North Pole in preparation for today. Using that as inspiration, the students have each written a set of questions they want to ask Eric," Ms. Tanya tells me. I flip through one of the student's books, and I see a filled-out worksheet where the student has written a definition for explorer and brainstormed some of the skills or knowledge an explorer might need to know. A few of the students sit perched on their chairs, staring eagerly at the smartboard as Ms. Tanya fiddles with the computer.

Suddenly the familiar sound of a Skype call sounds, and our famous explorer's face is projected larger than life onto the screen. He wears a trucker cap and a hoodie and sits so that most of the screen is taken up by his face. There is an audible gasp from the crowd of students and a few clap spontaneously. Ms. Tanya steps up to the camera and introduces herself; I have been the intermediary in setting up this experience, and the two of them have never met. She then moves away from the camera and situates the laptop so that Eric can see more of the class. A few of them wave, and he grins back. She explains that they have watched some of his film, and they have been studying explorers and adventurers. “We are just so excited to get to meet a real, live explorer!” she says, beaming.

“I am going to turn it over the children now, as I know they have questions they are just dying to ask you!” Ms. Tanya turns to the class and waits for hands to raise. The all do. The questions pour out, one after another. Ms. Tanya repeats the questions that are too hard to hear, and eventually she decides to have the children step up to the front of the room to talk directly into the microphone. “How cold does it get?” is one of the first questions. The kids, who have mostly grown up in the middle of a desert, shriek when they hear his answer way off in the negative numbers. Ms. Tanya asks if anyone has been in weather that cold, helping them to make connections to their own life. Everyone shakes their head. “But I like snow!” one student yells out. “I’ve gone skiing in Europe!” another says. “Can anyone explain to Eric how hot it gets here?” she prompts, and one student who has a particular flare for the dramatic explains that it gets “so hot it can kill you” with a wide-eyed grimacing face. The questions continue: “Do you ever get scared?” “What do you eat?” “Have you ever been attacked by a polar bear?” “How do you stay warm in such cold places?” “How old are you?” The last question makes Ms. Tanya, Eric, and me crack up, since it was prefaced as, “I thought all explorers were old or dead, so how old are you?” A student wants to ask a follow up question but seems a bit uncertain how to put their thoughts into a question. Ms. Tanya coaches them towards the words they need to get their idea out. “Will you keep being an explorer forever?” they ask. As Eric answers that question and takes a few more, Ms. Tanya looks around the class, mindfully assessing who has spoken and who perhaps needs a bit of encouragement, and finally signs off with a chorus of “THANK YOU” from the class.

Later in the day she thanks me for helping to set that up, and I let her know I loved how she had the students make up questions and just let the conversation flow. Inviting guest experts into one's classroom can be an unnerving experience. As a teacher, no matter how experienced, it is nearly impossible to predict what a speaker might say or do or how the students will react on any given day. Teachers must provide enough structure to support an ecological experience, as Ms. Tanya did in organizing the students with questions and prompts, while knowing how to respond in the moment, as Ms. Tanya did when questions went funny. I let her know the explorer had already emailed me, thanking me for the time to connect with Desert School, and I tell her as much.

She smiled and recalled how stoked the kids were after the call ended, how they suddenly had even more question, and how there was so much energy in the classroom. In a follow up interview, she elaborated even further. "The buzz that they got from him, and the questions that they came up with, even during our chat with him. Because, you know, you can tell them about explorers, and they could name ones that were in films or in books, but they still had a very Indiana Jones feel about them in their head. Then they spoke to Eric, and he made it real. Like when he described that you don't need to wear too many layers, because you sweat, and they were like, and I was like, 'Oh yeah!' It's different to talk to someone than to just read about it. But you know, it would be easy to overlook this as not ecological. I mean, it's using technology, it's not outside, but it's about connecting people to one another, sharing experiences." A few days later I overhear parents talking in the hallway about how their child got to talk to a real live explorer. Ms. Tanya responded, "This experience made me realize that we need to bring in more specialists. The effort – it is so worth it.” This is the payoff of *imaginative diligence*: transformative experiences for students and teachers.

Delight within the Pet-a-Doggy

I am with Ms. Tanya on a field trip to Dog Friends, a dog shelter in the industrial part of the city. I pair up with Ms. Tanya, while her female teaching partner and a teaching assistant work together for the day. We each have a group of about fifteen students. After an in depth briefing into how to act around the dogs and what to expect, we are off on our tour of the facilities. The kids do their best to stay calm as we walk through the outdoor kennels. We go to the inside kennels where the dogs are a bit calmer, and many of the kids oh and ahh. Several say things like, “That looks like my dog!” or “He’s so cute!” After a quick stop in the veterinary clinic, our group heads back into the dog socialization room. The guide asks all of us to sit in the seats provided, and the students are wonderfully behaved. It is at this point that I glance over at Ms. Tanya and see something I had missed up to this point.

Ms. Tanya is beaming and sitting on the edge of her chair, as if she is about to jump up. Her legs are slightly bouncing, and I don’t think she can smile any bigger. She looks like a kid sitting in front of a birthday cake and a pile of presents. I know she loves dogs, and animals in general, and that she is always the first to volunteer to take on a new classroom animal. When the puppies are brought in for their socialization, I watch her face light up with joy. When we are finally allowed to play with the puppies, she is up as quickly as the children, making a beeline to the pups for some petting. The dogs love Ms. Tanya, and they climb all over her. One climbs into her lap and lolls there as she pets its shiny black head. The kids have taken notice and remark with pride how much the dog loves their teacher. “You *are* the dog whisperer!” they say, in awe of their magical leader.

She stands up, carefully pushing the pup to the floor so that the kids can get a turn. As she does, one of the other dogs runs to the back of the room, bounding after a loose ball. Ms. Tanya has noticed, and suddenly she is there too. I clicked a picture at this very moment, and it captures the moment well. One of the trainers picks the dog up, cradling the black lab-mix in her arms like a furry two-year-old. The dog’s tail swishes happily back and forth. Ms. Tanya takes one paw in her hands, and she gently pets it. An unselfconscious smile adorns her face, and her eyes have a faraway look in them as she croons at the pup. “You are just the most beautiful, aren’t you,” she says, her attention completely locked on the dog. I am struck by the love she has for this animal that she hardly knows. The kids see it too, and they smile at their teacher. Everyone plays contentedly with the dogs for a while more. Several of the kids say, “I’m coming back here to help walk the dogs!” and “How could anyone leave them?” or simply “Awwwww.” A few ask her about getting a class dog. It is a moment filled with delight and curiosity of connecting with another living thing and realizing we are just one small part of this great big world. It was inspired by Ms. Tanya’s own expression of creativity: a deep open-hearted connection to other living beings, a passion for sharing this with others. This experience reminded me of Ms. Tanya’s often expressed worry that her lack of depth of ecological knowledge limited her abilities as an ecological educator, that without greater knowledge she might not be giving students the best they deserved. While I agree that there is a truth to this sentiment, and that it is an important one to consider in terms of improving ecological place-based education, I believe that in this moment it was also clear that you don't have to be a plant expert to demonstrate a love for the world.

Descriptions of Ms. Liz AKA The Lizard

When I asked Ms. Liz which desert animal she thought she most resembled, she thought for a moment before saying, "A lizard, I think." When I asked her why, she thoughtfully explained, "Well, they have lots of energy; they move quite fast. And they can be colorful. And, they love being in the sun, like me." This was how I had come to think of her over our time working together. Ms. Liz had a warm and bright personality, but she was also quite quick and direct, like a lizard grabbing a meal. Clearly her pseudonym was derived from this creature. She moved quickly, calmly and gracefully, with her shoulders back. She spoke directly to both children and adults, often with a twinge of dry sarcasm that seems to be for her entertainment and comes across as playful. Unlike some of the teachers, she was as comfortable indoors as outdoors. With her reddish gold hair pulled back from her face, and clothing bright and decorated with flowers, Ms. Liz reminded me of a flash of color in an otherwise neutral color palette, like the blue agama lizard of the Middle Eastern deserts.

~Ms. Liz, Part 1: The Lizard in the Garden~

The Lizard Expresses Her Intentions and Expectations

I heard the humming first, a gentle buzz floating among the marigolds and basil as I enjoyed a quiet moment in the garden. I was working on hand-pollinating the cucumbers and squash as I waited on the real pollinators to arrive, while Lalo lounged between garden beds bursting with green. The arbor built only recently by Mr. Kit was now covered in vines, heavy with young watermelon. The transplant from Buddy's wife, planted by Ms. Tanya, had grown five feet seemly overnight, and the tightly bound buds looked ready to bloom. I turned toward the humming sound, hoping it might be a few of the native bees finding their way to this desert oasis, when I saw Ms. Liz.

She was walking through the garden, clearly delighting in the space. Sunbirds flittered about her, perching on her shoulder as if to feed from the flowers on her colorful, billowing shirt. Lizards followed her as she moved, racing from one footprint to the other. Lalo jumped up to greet her, happy for a new companion.

It's not just one thing. Ms. Liz's hair shone golden with a hint of red and curled gently around her smiling face. "Well, this is even better than I expected," I heard her say. "It really is a living classroom…" She trailed off as she caught sight of me standing among the herbs. "Hello!" she called out happily as she noticed me. "Oh, I am just so excited to be out here. The gardens and ecodomes are what really got me interested in this school. I love that it is not just here to be pretty!" Lalo barked at these words, prancing around on her hind legs. "These spaces are here to be used, to have kids in them! It's just nice for them to be able to see how the world works. It's not just one thing though; it's the whole campus. It's the whole school, the well-being focus. I can only speak for myself, but I just find the campus so lovely." Lalo barked again in agreement. "I mean, if I am feeling stressed, I can just go for a walk through spaces like these," Ms. Liz said.

Lalo ran over to me, as if to encourage me to respond. "Yes! That is exactly what these spaces are meant to be used for – teaching, learning, or just being. There isn't one way to use any of these spaces, but they definitely can play a big role in helping students develop ecoliteracy." Like Lalo, I was grateful for another companion to join me along this journey, to learn with and from, as well as to teach and support. Ms. Liz was one of the first teachers to regularly make use of the many green spaces around campus. When she later told me she spent her childhood practically living at the beach, her *holistic approach* to education made even more sense. I was reminded of the work of Louise Chawla: enthusiastic mentors and experiences outdoors are the two most important factors in developing environmental behaviors (1999). It is interesting to imagine what education would be like if, in the early days of professional development, during on-boarding and before the start of the school year, all teachers were not just introduced to school policies and procedures, but the people and places around them. Helping teachers create unique and meaningful connection to the ecological community in which schools are located must become a focus of the work of ecological educators if we are to truly move towards the realization of all education becoming environmental education (Orr, 2004).

Putting it into childspeak. "You know," she started, "I would love guidance in how to take the more complex ideas of ecological literacy and sustainability and put them into childspeak, to keep coming up with new ways to teach for sustainability, but to keep translating it down." Her intention to make complex ecological ideas accessible to even the littlest children was obvious, and I saw it as a reflection of her *hopeful vision* for a school dedicated to ecological literacy. This interest in child speak launched us into a conversation about the five big themes of ecological literacy I had shared with the woman in the desert. "Ecological knowledge and understanding, sense of place, curiosity and wonder, ecological mindfulness, and environmental justice and sustainability – these may seem like huge concepts, but they can be broken down, translated down like you said, to any level. For the youngest kiddos, like the ones you work with, sense of place may simply be getting out of the classroom and into the rest of the classroom, making maps of their favorite places, and creating small worlds, for example." I pointed her to the work of David Sobel around nature design principals and map making for children (1998, 2008). "And justice is more about what is fair or unfair and figuring out how to share at this age than solving complex ecological problems. You are the expert at knowing what your students need."

I hoped I hadn't said too much all at once, and she let me know I didn't need to worry. "I do use the ecoliteracy framework to guide my planning. Curiosity and wonder really stand out…they are quite easy to integrate into the early years teaching. Sense of place is also a good one. It helps them understand other cultures, to be aware of who is here and where we come from," she said, further demonstrating her commitment to *responsive action* in teaching, especially for our youngest students. As she spoke her voice was calm, upbeat, and measured, her words crisp and thoughtful. I honestly think her eyes twinkled as she spoke; her care for her students and the world around her was palpable. The humming sound I had heard earlier seemed to amplify every time to she spoke.

A vision of connection to nature. She asked for a tour of the garden, and I happily led her around as we chatted about where she was from and what she expected to find at Desert School. "I taught in the UK before moving to Desert City. When I saw the pictures of the ecodomes and gardens at Desert School, that is what made me interested. I read the mission, and I thought that it's a really important issue. For some other schools, it’s a bit more superficial, but this school seemed more than that. Desert School seemed to be about helping them connect to nature and teaching them to care. I see the mission of Desert School as dedicated to developing the whole child, to make them well rounded people, ecologically but also as a whole person. It’s not all just academic, academic, academic,” she said, slicing her hand through the air into her palm each time she said “academic.” Her belief in a *hopeful vision* of the school providing a unique ecological education overlapped with her belief in creating a connective*, holistic education* for our students, which fits snuggly into an ecological framework. “It’s about the whole child as an individual: their personality, their well-being. It’s about recognizing that every child has different needs, and not every child is academic, and some just want to garden. For example, some students really struggle in a mainstream classroom, but they will thrive in the garden. These spaces can help us all to understand that you can be amazing at something other than just the academic side. You might be amazing at caring for another living thing. They might be amazing at understanding how the world works or understanding how to make a difference.” Williams and Brown (2013) have noted this exact same idea, integrating it into their work around school gardens and sustainability education. They write, “It is widely recognized that not all students flourish in didactic, abstract, and reading- and writing- centric learning environment; many children and youth integrate new information best through practice or bodily engagement” (p. 121) such as that which happens in the outdoors, in a learning garden for example. Ms. Liz brings this idea to life through her practice and a *hopeful vision* to help students connect with nature. Her cheeks flushed as she talked, and I realized she has been subtly rearranging loose stumps around a wooden crate to create a small sitting or drawing space for one or two children. Lalo helps her, pushing one stump with her nose until it is tucked in close to the crate. We continued walking, and I noticed the humming sound again. Lalo darts off in the direction of the sound.

Meeting them where they are. “What role do you expect to have in carrying out this mission?” I asked, and as if she was waiting for this question, Ms. Liz launched right in without hesitation. “My job is to know the children inside and out. To understand what they are interested in, what they are good at, what they are excited and motivated by. For example, for that child who struggles in the classroom, but loves to go outside, I might say to him, ‘If you do this, then we can find some time to go outside’ which helps him to find focus when we are working on a specific task that he might find more difficult.” As I listened to her, I contemplated the many ways I’ve seen Ms. Liz reimagining activities and tasks, responding directly to the student in that moment. For example, I have seen her bringing kids outside for phonics lessons and use sticks and flowers to create pictures or taking time out of her busy day to water some plants with a particularly active student. “My job,” she said thoughtfully, “is about meeting the children where they are, not that it is regimented, come now, sit here, do this. It’s about giving them options to do different things at different times.”

What she was describing was a commitment to allowing teaching and learning emerge. Eisner, quoting Dewey, discussed this as “flexible purposing.” “Flexible purposing,” he wrote, “is opportunistic; it capitalizes on the emergent features appearing within a field of relationships…[it] thrives best in an environment in which the rigid adherence to a plan is not a necessity” (2002b, p. 7). Ms. Liz expected and intended to teach with responsive action and spontaneity as a teacher and particularly as an ecological place-based educator. Embracing the responsive element of ecoPBE is a key component of ecoPBE: learning to lean into the moment, to learn from the moment and the child and the place. Demarest refers to this as “active co-operation,” and as an experienced ecological place-based educator, she sees it as driving authentic learning and discovery, as well as authentic evaluation (Demarest, 2015, p. 36). As Ms. Liz described her intentions of responsive action, I saw a skilled ecological artist developing her skills and honing her creativity.

It’s all linked. “What about the ecological side of things?” I asked, wondering if this same open and personalized approach was embedded into her interpretation of the school mission. “It’s not just about recycling,” she said, surprising me because recycling is usually the first example teachers give when asked about ecological or environmental education. “It’s about helping them make connections; if I do this, then what? It’s about helping them see what is fair or not fair, and they are so good at that at this age. It’s about helping them see the bigger picture and helping them make connections. Like I said before, it’s also not just about the academic, about building their knowledge. It is also values based, about developing compassion and valuing their personalities. The fact that this school is also project-based is also helpful. This is similar to what my other school did. Projects and celebrations make the work a lot more meaningful. How we do it here, particularly, means that it’s all linked. In other schools you might have the project [as a subject], but students would learn to write a sentence in the other subjects, writing for example. Instead, at Desert School, we can ask them to write a sentence about what animals they might see on a safari when we are studying animal adaptations as part of a project. And that is the ecological side. It’s all linked.”

Her intention and expectation that we would work together to create a *holistic education* is apparent here. Perhaps it is because she is an early years teacher, where the focus is often on the development of values and emerging interests, as opposed to the skills driven focus of the primary and secondary years, but her emphasis on the curriculum of "being" versus "having" was evident here in her belief that education should emphasize connection (McConnell Moroye & Uhrmacher, 2018). In reflecting on this moment, and all of this research, I have to wonder if ecological place-based education can be anything *but* holistic. By all accounts, from Sobel's more formal definition of ecoPBE spanning subjects, to Orr's connective education linking the head, heart, and hands (1992), to Gruenewald's "theory of place as a multidisciplinary construct" that "works against the isolation of schooling's discourses and practices" (2003, p. 620), ecological place-based education *is* holistic education. Still, it is important to note that even the less experienced ecological educators, like Ms. Liz, named this concept as an integral expectation and intention guiding their teaching at Desert School.

"So, where does this strong commitment to the environment come from?" I probed. "In terms of the ecological side of things, I have always been a caring person. When I was about ten, I was part of the eco-council at my school. And my dad is a marine biologist, so I have always been exposed to that, kind of as his sidekick. One time, when I was twenty, I went out to sea, and there was a turtle floating in the water. It had a piece of plastic wrapped around its neck, and my friend next to me said, 'Oh, that's sad.'" She made an overly dramatic and sappy sad face. "I turned to her and said, 'No. That's not sad. That's really sad. That is us. That is a tragedy." Her voice grew strong as she told this part of the story, and she shook her head as she repeated her words, pointing a finger at me, as if I was her friend on the boat. Of the teachers I have met so far, her passion is the most palpable, more action-oriented than simply appreciative or interested.

The entire time she spoke she stripped palm fronds of their leaves until only the hard midrib was left. She dug these into the sand in a small circular shape. Remembering the hut at the camel farm, I joined in as she continued to talk. “Or when I was young with my dad, we would play with plastic we found at the beach, like ice cream scoops, but then when we went home we would take them and put them in the recycle bin instead of throwing them away or leaving them on the beach. I feel like I have always had a sense of what is right and wrong when it comes to the environment,” she said assuredly. “I try to draw this out in my classroom where I can, like teaching little ones to use the recycle bins properly even though the older kids barely get [the sorting] right. I’d love to have a compost in my room to help them make the connection between their food and the planet.” I smiled encouragingly. We bunched the remaining palm leaves together then tied them with twine, weaving bunches together in an over-under pattern until we had a large mat. We took this and wound it around the circle of midribs, laying whole palm fronds on top as a roof. Lalo, who had silently returned, immediately took the opportunity to make herself at home in the tiny hut; she too seemed to enjoy the way Ms. Liz tried to connect place to learning through innovative use of small, secret outdoor spaces (Sobel, 2008).

Sensory experiences and opportunities for ownership. “How would you describe yourself as a teacher? What is your favorite part of the school day?” I asked. “My favorite part is anytime that I see them putting what I taught into action. I love watching them play and using what I’ve taught them. I also am very good at teaching kids to be independent. I am comfortable giving them opportunities to do things for themselves that others might do for them, like knowing how to sort the recycling or letting them walk down the hallway by themselves. I like to give them that ownership. And I really believe in sensory learning, in engaging all the senses whenever possible." I jumped in to add an idea, "Yes! I am always looking at different activities and trying to figure out how we can do that with different materials or in a different location—" She interrupted quickly, "Yes. And why not use real objects? Why does it so often have to be a picture of the object? Why is it a picture of a cone and not an actual physical cone. Or why use paper and pen to do a weighing project. Just use the actual objects and estimate or use a scale." She mimed picking up one object, then another, and comparing them, before handing me the imaginary heaviest object. Ms. Liz seems to expect that students should connect with their learning, both figuratively and literally, though actual objects and experiences. Again, this seemed to reflect her commitment to *holistic learning*.

We walked for a moment in silence, and I realized she had created little pockets of play throughout the entire garden. There was the hut we built and the little sitting space she first set up. There was an area with loose parts to arrange – sticks, rocks, a few leaves that had already fallen from the trees. There was an area with lots of different sized objects and a makeshift teetertotter. A scale and weights! Little personalized, nature-based learning spaces for different tasks dotted the landscape and opened up a whole new set of options for play and discovery, spaces for "active co-operation" (Demarest, 2015).

The humming sound from earlier had returned, and we both looked around curious as to what could be making such a noise. I noticed that several of the flowers on the moringa tree had opened, and the first blossom on the butterfly pea plant from Buddy’s wife were about to unfold. At each bloom a tiny honeybee waited to be the first in line. The pomegranate flowers stretched out like comets, and the sun birds darted among them, hungrily feeding on nectar. The garden buzzed with life, a bit louder with each flower that opened. I was standing in the middle of the noise I’d been trying so hard to find.

Suddenly a chorus of birds sang out from all around the garden, and for a second I thought I was back home in the Midwest, waking up on a summer morning. I heard a rustling overhead. Lalo whined excitedly next to me. Everywhere there was movement and color. Cucumber and pumpkin flowers unfurled as we watched, and sunflowers opened their yellow faces towards the sky. Papaya trees grew heavy as their fruit ripened, and large neem and moringa towered over the garden where yesterday there was only sand. Blue agama lizards ran along the ground, and mint spread like wildfire behind them, poking up from every bare patch of sand. As if the creation of playful spaces in the garden had called forth some wild child spirit, the garden buzzed with life and joy. Ms. Liz smiled and the purple sunbirds with long curved beaks rose from their perches and flew toward the red pomegranate flowers flinging open their blossoms.

I thought of the labor of the last few days, the structures built, and paths laid, the seeds planted. I remembered the loving care and kind words shared between Mr. Kit, Ms. Tanya, myself, and the ground beneath our feet. Like them, Ms. Liz expressed a surprisingly deep sense of *ecological integrity* as she outlined her intentions and expectations for Desert School. She was committed to the big *hopeful vision* we all shared, one that connects students to nature more deeply than the superficial, greenwashing of many schools (Greenwood, 2010). She expected this to be an ongoing work in progress, requiring continuous learning, and *responsive action* - meeting her students where they are in any given moment. Perhaps most inherent in Ms. Liz's words and actions was her intention to provide *holistic learning* opportunities for her students, to use the school campus as part of the curriculum, and to help link it all together. The garden buzzed with the hopefulness and purpose of her intentions; I imagined time with her in her classroom would be similarly artful and lively.

I sent Ms. Liz away in the late afternoon with armfuls of flowers and fresh herbs. The honeybees followed after her, but not before starting to build a small hive in the branches of the flowering neem tree. Lalo traipsed through the garden chasing sunbirds and fallen leaves in the fading light before running off after a swirling dust devil. I checked in on the chives and lettuce and plucked a ripe papaya for dinner. I made notes on the day's activity, and I wondered at what tomorrow and every day after would bring. Just as I tucked myself into the blanket, I heard Lalo wander back towards the garden, then scamper off again. As the stars twinkled across the sky, I let my mind wander across the landscape, even as my eyes failed me in the darkness.

In that space that was neither here nor there, I held my hands up to the sky, shielding the tiny beehive from something I could not see. The humming from the afternoon turned into a rumble, and once again the ground shook beneath me. I didn't see the white beasts, but I could feel the tracks they left across the landscape. The dunes started to crumble in the distance, their crusts too fragmented to withstand the bashing of the four-wheelers and SUVs. An avalanche of sand snaked its way toward the garden, toward the tiny gray hive, and I raised my hands higher, as if to press back the wall of sand. I called out for Lalo, and like magic she was there. She stood her ground and raised the hair on her back. She barked ferociously before lunging at the sand. With the shake of her head and the snap of her jaws she stopped the advancing dune in its tracks. With a quiet growl she walked it back, away from the garden and the newly built hive. Then, with a tired howl, she sang the sand and me back into a deep slumber.

Ms. Liz, Part 2: The Lizard in Action, Expressions of Structure

The Lizard, The Proud Cloud, and Magical Challenges

I sketch quickly between calls for my attention. In Ms. Liz's room, there is rarely a dull moment. Look here. Look here. Just an ordinary day surrounded by four and five year olds. Just inside the door is a set of cubbies, low enough so the children can put their bags away; on top is a bin full of water bottles and snack boxes.

Next up, a cork board hangs on the wall, studded with pictures of the students holding up a white board with the first letter of their name written large in blue ink. Inventions made of recycled material are tacked up and displayed along the counter. Ms. Liz's handwriting explains what I am looking at. "A house for Delilah Bear and star magic." And in a child's handwriting: "A box for strz [stars]." "A sEEd swird (sword)." Hand-dyed paper decorates the sides of the display.

And then there is a the "Proud Cloud," where children choose pieces of work to display for all to see. ILuVmISKorLBkozmisLiziztheBestteatr [I love my school because Ms. Liz is the best teacher]. In Ms. Liz's writing is a note from the student, "I feel proud because when I first came to my school, I couldn't write my name. Now I can write all by myself.” A blue paper with a series of alternating finger printed dots, orange, blue, orange, blue, has the note, “I am proud because I did a pattern.”

The back wall is a hodgepodge of counting lines, student work, and materials being sorted and prepared for the next activities. The room is fully of energy, color, and imagination, a reflection not only of the young students, but of Ms. Liz herself. She works hard, remaining ever *imaginatively diligent* as she helps students engage with the world around them in surprising ways. “By suggestion and example, I believe children can be helped to hear the many voices around them. Take time to listen and talk about the voices of the earth,” Carson wrote in 1965, reflecting on her experiences with her nephew. Ms. Liz takes this time to listen and talk about the earth with her students, and she is the inspiring and enthusiastic mentor Chawla and Carson honor in their respective work on developing environmental behaviors (Chawla, 1999) and a sense of wonder (Carson, 1965). “Magical challenges” hang on a door that leads to the next classroom, and inside students find playful challenges linked to a personal or class learning goal. Three bins of neatly and perfectly sorted rubbish and recycling are next to the sink.

The outside wall, which is mostly window, looks towards the playground. Light streams in and a myna bird hops along the sidewalk. I think of how many opportunities there would be with a window like this for impromptu lessons and interesting questions to arise. A set of potted sunflower seeds sprout along the edge of the window, looking a bit parched in an early hot spell. A bookcase full of early readers and story books stands against the wall, creating a sunny reading nook complete with stuffed animals and beanbags. The tables in the middle of the room are clean and organized, set up for the writing activity that will follow the short session happening at the front of the room.

There, on the carpet, the students are gathered in a tight circle around Ms. Liz. She is showing them pictures of different letters, and they are taking turns suggesting the sound it makes. The whiteboard is covered with notes and pictures, a behavior chart of smiling clouds and rainbows and shooting stars. The perimeter of the board is lined with cut out hearts and handwritten notes of appreciation. The class mascot, Delilah Bear, sits perched on top of a big yellow chair, a diaper covering her bottom, and a blue t-shirt on her top. Her furry paw seems to stretch high into the air as if she wants to join the phonics lesson.

Color-coded timetables are taped to the wall, and I can see the many iterations we have already gone through in the course of one year. I wonder how Ms. Liz keeps it all straight, then I look around the room and at the four and five-year olds gathered around her. I know Ms. Liz is comfortable with uncertainty and that she embodies the artistic expression of imaginative diligence in her practice; she has the systems in place to support the creative play her student – and she - need. I can see her intention to infuse her work with holistic, sensory experiences as well as develop the students' ownership in the displays she makes and the challenges she presents. The room tells the story of the community inside and the love is palpable. While there is a noticeable lack of more typically ecological examples beyond the seedlings in the window, there is a sense of interdependence and diversity, of the classroom itself as an expression of *open-hearted connection* and artistry in the making.

The Lizard Embraces Systems and Spontaneity

It's the end of the day when I enter Ms. Liz's room. She's told me I can "pop in" whenever I like, and I have a bit of time, so I take advantage of her offer. I look at the board where she keeps her daily schedule. At the end of each day is Discovery Time and then Clean Up. Looking around I see kids in small groups or playing independently. When I ask Ms. Liz, she explains that at the end of the day they get a chance to choose independently what they would like to do. She tells me that some days they have specific stations set up, if she is actually wanting the students to practice something in particular. More often though, Ms. Liz allows for open choice with students getting time to just play and explore, reflecting her intentions to provide experiences for sensory experiences and ownership. As she explains to me, "By the end of the day they are tired of learning and being at school. During the day, especially here [at Desert School] we spend so much time moving from activity to activity, from place to place. It is nice to just give them a chance to choose. I believe in creating independent students who can take care of themselves. This is one thing I can do." Even though there are so many things going on – not to mention so many tiny humans roaming about – neither Ms. Liz nor the support teacher seem stressed out. The students are smiling and talking, and nothing is out of control. As someone who usually works from primary years and up, I always wonder how early years teachers manage to keep a handle on so many small moving pieces and people. Being in her classroom now reminds me of another school I used to work at, in which almost every part of the day was play-based even up into middle school. I realize that, being in Ms. Liz's room, I feel as happy and relaxed as the students look. For a moment, I just observe.

One student is near the rug in the front of the room, stepping from one soft pad to another. "I jump in the puddles," he says to himself, providing a little verbal peek into his imagination. Another group of students kneel on the ground around a bucket of Legos.

They are building bikes from the Legos, testing them out on a wooden ramp. They don't go very far, but the students laugh when they fly off the end. On the rug, next to where the student was just jumping, a couple of students start tumbling. One of them looks at me watching, runs up and says, "I like to flip!" The classroom assistant moves around, checking on each of the groups, but not interrupting. She keeps everything running smoothly. Ms. Liz stands near the front of the classroom interacting with students one on one as they run up to tell her various things; she switches between topics and ideas with grace (Eisner, 2002a). She is always teaching and evaluating, even in the most mundane moment, drawing on her experiences as an early years teacher to inform her spontaneous and authentic responses. Most of the time she asks a question in return for their comment: "Oh! Why did you make it pink?" "Can you tell me more about what you built?" "How did that make you feel?" On table nearest the door is a large plastic balance scale. Next to it sit a stuffed tiger, a plastic dinosaur, and an agate, among bits of Lego. When she catches me looking, Ms. Liz explains that the students have been practicing comparing weights of different objects. Real objects, nonetheless!

Without any sense of urgency, Ms. Liz glances at the clock and announces that it is time to get ready for the bus. Because of the schedule at our school, students who take the bus actually leave about twenty minutes before the end of the day, whether in the Foundation Stage or in the Primary program. Many of the teachers have noted how this discrepancy between bussing and non-bussing kids has meant a slightly more complicated end of day routine. The early years teachers have noted that this means some of their students miss out on key parts of the day like circle time, clean up and read aloud. It also means they have less freedom to move outside as the mood inspires or visit the gardens at the end of the day, as someone would either be left out or left off the bus. Some of the structural aspects of the school constrain Ms. Liz's expression of deliberate spontaneity. Nonetheless, she nurtures it in her own teaching in the classroom in many ways, even at the end of the day.

As the "bus" students get ready to leave, the rest of the students continue to play. Unlike in the older grades, Ms. Liz's students ask for her help with what seems like everything – getting bags out of cubbies, tying shoes, putting on hats. "Ms. Liz! Ms. Liz! Ms. Liz" is the refrain. Ms. Liz's reply? "I would like you to try to do it first. Would it be more fulfilling if I did it for you or if you could do it yourself?" she asks a student who has just walked up asking her to zipper his bag. He walks away, setting the bag on the ground, and a minute later holds it up to her zipped shut with a big smile on his face.

After the bus students leave, Ms. Liz announces to the students, "I am putting a timer for two minutes! You know what you have to do!" The music of Mission Impossible plays as a counter counts down two minutes. As soon as the clock started the students began to scurry about the room, and a system emerges from the disorder. The students work together, putting things away, sorting recycling, attempting to sweep, and asking others who are not helping to help. Ms. Liz, the support teacher, and I all help, modeling the best way to clean up. Interested in the recycling, I stay close to the bins. I notice that Ms. Liz's students, without being asked or shown, are putting all of the paper into the blue paper bin. Not a single student accidentally puts it in the rubbish bin. Even if recycling won't save the world, I smile to myself. When the timer goes off the room looks significantly cleaner and more organized.

Expressions of the Curricular

The Lizard Counts Trees and Weighs Morals

I am standing at my computer working on email when Liz barges into the office. She peaks around the corner and, seeing me at my desk, rushes to sit down. “Do you have a minute?” she asks, putting her hands up to the side of her head. I notice her face is flushed. Liz, who is usually calm, collected, and bubbling with a mix of sarcasm and joy, is roiling. I brace for the worst. “You won’t believe this!” she exclaims. “Upper management have this new idea. They want us to start giving worksheets…on paper…for maths. Two per child per day! For what? Why do we have to use paper? Do you know how much paper that is? What am I supposed to do? We are an eco-school, and now this?” She sits down in front of me, a stack of books resting in her lap. “What am I supposed to do?” she asks again.

“Do you know why they want to make this change?” I ask, hoping to help her start thinking through the issue, instead of getting more and more upset. “Not exactly. I think it’s for evidence. But if that’s the case, why can’t we just take a picture of it?” She is exasperated. Liz was raised in a family of environmentalists, and she is *imaginatively diligent* in her determination to minimize classroom waste. Once she spent her free time creating a digital scavenger hunt for the early years students; it was such a hit we ended up using it at promotional events, saving hundreds of pieces of paper that would otherwise have been printed, used, and likely discarded. When I visited her class at the end of one day, there was little trash, and what was there was deftly sorted by the kids, who called out to one another, “Make sure it goes in the blue bin!”

I take a breath, hoping Liz will do the same. “Tell me,” I say, “How would you have done this in your last school?” Liz explains that they had white boards and iPads, or more often they simply used real things to carry out the work they were doing. “For example,” she explains, “if we were working on heavier and lighter, we just had a balance scale, and actually tried it out with real materials. Or we made estimations, then tested them. What we needed to write down, we used white boards for, and took pictures to send home.” She looks up at me. “Why do we even have to use paper?” she says again.

Trying to get her to draw more on her imagination than her despair, I ask her what she thinks she could do, even just one action she could take that would move towards a solution she was more comfortable with. I am hoping that, together, we can find a way to work creatively within the system, one of the many ways I think of imaginative diligence as an expression of artistry. She offers up that she could create an alternative, using no paper or minimum paper as an example for others. While she is confident that she could do this on her own, she still seems a bit defeated. “Look,” I say, “let’s do some math.” I get on the computer and start to pull up the data. “One ream of unrecycled paper uses approximately six percent of a tree. So, one tree is worth about sixteen reams of paper…” I trail off, starting to look up other conversion rates. Quickly, in her head, Liz makes some calculations. “That’s ten trees for all of EYFS – for only this activity! That is unacceptable!” There is a pause, then, “Ten trees! Ugh!” Liz puts her hands up to the side of her head again, then lowers them, gripping the books in her lap. She stands up. “What am I supposed to do?” she wonders for the third time.

I start slowly, “While I know it’s not a fix all, you could ask that they print on recycled paper, starting with this stack here.” I pull out a ream worth of paper printed on one side that I use for my own printing. “I know it’s not a fix all, but it does reduce overall waste. And for some it might be easier to swallow than making the sorts of changes you are comfortable making.” Liz stands up a little straighter. “Yeah, okay. That might work,” she says, shifting a little. We discuss how they usually run off copies, and recognize it may be one extra step, and it might not work perfectly. She says it’s worth a try. “And,” she adds, with a somewhat lighter tone, “I could try it the way they want it for one week, then try it my way for another week, and compare. That way I can offer something useful and not just stand by.” “That sounds reasonable,” I say, feeling my own sense of relief compounded with frustration, as I know how she feels. It often feels like one step forward and one step back, this constant disconnects between ethos and action. But I am thrilled Liz came in today. In a selfish way, it makes me feel less alone on this journey. Apparently, Liz feels the same. “Thank you,” she says, “for listening. I just needed to vent, and I thought you would be able to help.” We agree to check back in next week, and she leaves, reading books in hand, shoulders back, face still flushed, but less so. I neaten the pile of recycled paper, bending down to put it back in the drawer, turning back to the email I was writing.

The Lizard and Her Curriculum

Ms. Liz calls me into her classroom as I walk by one afternoon. The kids are in free flow, playing in small groups and working on individual challenges Ms. Liz has set up for them. Teachers have been getting ready to prepare the final reports of the year, and the back table is covered with project books. These books are where students practice writing, draw pictures, and teachers provide feedback. Ms. Liz digs through the pile and pulls out one book in particular. It is L’s books, and she wants me to take a look at one of his writings about his invention.

The children have been imagining themselves as inventors in their most recent project, and L has written about a car that goes to the ecodome to plant seeds and flowers. There is the telltale curve of the dome, and two wheels below what must be the rounded vehicle top. A gangly flower sprouts up from the ground. There are small spots of black all over the page. I assume these are seeds.

Ms. Liz looks onto the page with me, then grabs another book. I flip through project books full of kids writing and drawing. With each turn of the page, the weeks pass by; the writing improves, from barely legible scribbles, to best guess spelled sentences and illustrated drawings. Most of the drawings center around the school campus and homelife, place-based education for a four-year-old. There are pictures of the beach or pool where most kids spend their weekends. There are pages full of repeated letters written with increasing clarity: small a, big a, a, a, a, backwards s, big s, super curly s, s.

Ms. Liz’s face glows with pride, and she holds a hand over her heart. I can tell her work means a lot to her. Her artistry shows in her *open-hearted connection* to the student’s creation, and what it tells her about the student. At one point I stop to admire a particular drawing, and she says, “That one isn’t even the best example!” as she digs out a book from the bottom of the stack. “Look at this!” she exclaims. Her eyes brim with tears, and she covers her mouth a little. “I get so emotional when I see the progress they have made,” she says. Here in this community, her classroom, it is okay to get emotional, to cry and feel things. When you are four years old, or even five, being open-hearted is the most important job. Ms. Liz knows this, and she lets her pride in her students show with a big heart.

After I finish looking at books, I sit for a while and just listen. Children are playing, exploring, coming to know their small world, to make sense of it all through curiosity, care, connections (Moroye & Ingman, 2013).

> There is a steady, calming beat in the background
> Dum, dum, dum. Ting! Dum, dum, dum. Ting!
> Punctuated by the metallic ding of a xylophone being played unskillfully
> but with great enthusiasm.
> Argh! Is that Ms. Liz, acting like a pirate?
>
> Crush, crack. Sudden quiet.
> What happened? Calls out Ms. Liz, in a sing song voice.
>
> Meow, meow, meow – two girls roam through the class acting like cats.
> Where is my baby?
> No, no, no, no, no. It's *my* turn.
> There's still time for everyone, Ms. Liz reminds them patiently.
>
> Where are you from? Turkey! Me too!
> Small voices chitter quietly.
> T t t t Tee Uh uh uh You er er er Arr k k k Kay.
> Good girl…Turkey, Ms. Liz confirms with a smile.
>
> Woosh, woosh.Vroom, vroom.
> Flish, flish, flish, flish.
> Wooden cars wheels, car sounds,
> A spinning paper with the moon and stars on each side.
>
> Miss, I made this for you.
> Miss, I love you.
> And the clean-up countdown begins…

Expressions of the Pedagogical

The Lizard Tells Tall Tales

It is early January, and the weather is just right for playing outside. In this part of the desert, winter is a welcome affair and the height of the growing season. No longer do the plants wither in the heat, and the humans too blossom from the inside out. This is what we have all been waiting for. I recently taught an FS2 early years class involving seed observation and planting, which sparked a request for a chance to tie in storytelling with the gardens. The FS2 current project is called “Can you tell me a story?” and Ms. Liz’s children are working on identifying characters and ordering different parts of familiar tales in preparation for their child directed classroom production. They story they are working with is “Jack and the Bean Stalk,” so today we will be planting beans outside the ecodomes.

Ms. Liz leads the students outside, and Ms. Annabel, the classroom assistant, and I help organize the students into smaller groups. I hand each teacher a jar with different types of beans for observing, as well as a packet of beans for planting – one bean per child. I quickly demonstrate to the teachers how deep the beans should be planted and point out their assigned areas. I watch Ms. Liz as she works with her group. First, she has them pass around the jar with the different types of beans. “How are they the same” she asks, “and how are they different? Have you ever planted beans before? What do you think will happen?” The children offer their observations and ideas. “This one has spots and this one is white,” says one. “I have a garden at home, in the kitchen,” says another. “I think they will grow up and up and up and there will be a giant,” says one more, standing on tip toes and reaching up to the sky. “That sounds like something we read in Jack and the Beanstalk,” Ms. Liz suggests, helping them make the link between their classroom learning and the beans they hold in their plants. The child nods proudly.

“Okay. I need everyone to find a yellow lolly stick and stand next to it. When you look ready, I will give you your bean to plant.” She gives the children a moment to locate the yellow craft sticks stuck into the ground to demarcate planting areas, then she hands out a couple beans to each student, demonstrating how to poke them into the sand and cover them up. They do just that, and I step in, having planted with this class before. "Does anyone remember what we say to the seed after we've put it in to the soil?" One little girl with a remarkable memory shoots a hand up in the air while saying, "Grow tall little plant!" "Exactly," I say, reaching down to pat the soil. The kids turn to their plots and repeat, "Grow tall little plant." One reaches down to tap the soil like I did, and I laugh. "We are going to have to come back out and check on these, aren't we?" Ms. Liz asks her group. They nod vigorously.

A few weeks later, Ms. Liz's class is seated on cushions near the front of the room, and the classroom is filled with parents. So many have come for the celebratory performance that I have to stand outside at the door to watch. One child, F, stands at the head of the room, a paper crown of sorts on her head. She is holding a copy of Jack in the Beanstalk in her hands, but she looks at the audience as she reads. "And then Jack's mother tossed the beans out the window!" She imitates someone throwing a handful of beans towards the classroom windows. "Then at night the beans magically grew up and up!" She points at one student who is kneeling on the floor and motions impatiently for him to grow "up and up." The parents laugh. "Then Jack woke up and saw the beanstalk." She points at the student playing Jack, and the child rubs her eyes pretending she just woke up. F nods her head approvingly. The parents laugh again, and I see Ms. Liz off to one side, laughing so hard tears squeeze out the corners of her eyes.

Later we discuss this particular moment in light of Ms. Liz's experiences so far integrating ecological education into her way of teaching. "It's very fulfilling," she replies. “I see that they care. They show me that they care and are making connections in what they say and do, like the plastic bag or recycling on their own. I also try to make them feel that Ms. Liz trusts us, this is our show, it’s actually ours. Like you saw in Jack and the Bean Stalk, there was F, that was actually all F. She assigned roles, and lines, and led the whole thing. She was amazing, and the kids had so much fun. It’s actually a lot easier because the kids know they can do it themselves, they trust themselves. It’s so important that they have ownership of their learning, that they have that independence, that they can make mistakes. In FS they have so much discovery time, and I like that they can use that. In the upper parts of the school it gets into, ‘Okay, now it’s time to sit down, now we do a fact file, okay.’” I think about the importance of teaching students the idea of “stewardship” and giving them opportunities to show they can care for things. As Ms. Liz expresses *open-hearted connection*, the students learn from her that it is okay, and even encouraged, to be kind and caring to other things. “And the more you get them doing it, the more connections they make between their actions and the rest of the world, the more they take responsibility for their learning. Trusting the kids means they learn to be able to do it, which means we can give them even more ownership.” Ms. Liz’s approach to teaching and learning provides her students with lots of opportunities for practicing how to work together creatively and respectfully, without always being told exactly what do to by an adult. It starts with Ms. Liz being willing to trust that what needs to emerge will, to know when to push, and when to sit back and enjoy the show. Ms. Liz nods enthusiastically, “Yes, exactly. Like with that [Jack and the Beanstalk] celebration at the end, I really just had to help them move towards the goal, but they did it.”

The Lizard Makes the Leaves Dance

I am sitting in the hallway, knees tucked awkwardly under a kindergarten table. I am meeting with my mentor, Sue, discussing our recent workshop and subsequent classroom observations when Ms. Liz walks up. She holds an iPad in one hand, the hand of a child in the other, and she is wearing a necklace made of colorful beads and pipe cleaners. “Ms. Emily,” Ms. Liz begins, “F wanted to show you something if you have a moment.” F, normally a very boisterous four-year-old hung back shyly, looking up at us through her eyelashes as she twisted back and forth with her feet planted in place. Perhaps it is because Sue is present. Perhaps she is just being theatrical. F has a bit of a flair for the dramatic. “I would love to see what you have to show me, F. I think my friend Sue would like to see it as well, would you Sue?” “I would love to see, F!” Sue exclaims with genuine enthusiasm. Her face lights up, and she turns her entire body – which has been facing the table – to F. I do the same, and Ms. Liz guides the child closer to us.

“Tell me, F,” I start. “What do you want to show us?” With that little prompt, the girl springs to life, explaining in her Italian accent, “We were trees! And leaves! We made a video. I will show you!” She takes the iPad from her teacher’s hand and turns the screen towards us. As she hits play, her finger slips and the video, which was ready to play, has to be found again. She holds up one little hand, as if to say, “I’ve got this!” then scrolls through the images and finds the video again. This time she finds the play button easily and turns the screen towards us. On it, small children crouch on the ground, curled into little balls. In the video Ms. Liz is heard saying, “Imagine you are a teeny seed, so little but full of life. Now you are growing, up and up and up!” The students slowly stand in the grass, still in a circle. Some are up right away while others take their time moving from the ground to standing upright. Some children just stand there, looking around, while others really take on the role of being a growing tree. They slowly wriggle their arms up, as if the ordeal of growing tall is very hard. They clench and unclench their hands as if they were the tiniest branches reaching towards the sky. In the video the sky is overcast, and the wind blows forcefully, ruffling their shirts and messing their hair. Ms. Liz tells them to feel the wind blowing and imagine how the trees would move in that wind, to move as if they were trees in the wind. On the word "imagine" many students closed their eyes. Ms. Liz then tells the students, "If you want to, you can close your eyes. How does a tree move in the wind?" Students begin to sway and twist. Some simply stand with their hands by their sides or on top of their head, leaning from side to side uncertainly. Others move gracefully, arms up and out, feet gently moving beneath them. One student was having his own dance party, snapping his fingers, shuffling his feet, and shaking his head, eyes closed the whole while. I've known a few storms to make trees dance like that. "Now you are a leaf! The wind has blown you off the tree! How will you move? Where will you go?" Suddenly sixteen four and five-year olds are moving around the field without pattern. Some lie down on the ground and roll around. Others are moving so slowly and lightly they could have been leaves in another life, floating gently through space, coming to rest on the floor. One child stands up and sits down several times, reminding me of the way a big gust of wind can kick up a pile of leaves out of nowhere. A few of the boys are flip flopping around on the field. It is hard to tell if they are just goofing around or if this is how they envision leaves moving. Ms. Liz does nothing to tell the children if they way they are being is right or wrong, and you can see from the camera that she is also swaying at times, caught up in the moment. As the video continues, the rest of the children settle onto the ground. Slowly, they stop moving. The wind has died down, and they rest where they landed.

Back in the classroom, the video shows a question posed by Ms. Liz to prompt students to think about the experience of being a leaf: “How did you feel?” The next image shows their responses: strong, calm, happy, swirly, sweet, happy floating in the air, then sad falling on the ground. I wish I could have been there for the activity and the debrief; I can imagine Ms. Liz in her calm and clear voice, asking the children to explain their answers as she often does, subtly coaching the students to advocate for themselves.

As the video ends, Ms. Liz explains that she will send this video to the parents at the end of the day as part of the daily updates. She looks to Sue, who co-led an education for sustainability workshop with me over the weekend, and Ms. Liz smiles, explaining, “I loved the activity Sue did this weekend, and when I realized it was so windy outside today, I thought it would be fun to take the students out and try it out. They needed a chance to move their bodies, and this seemed like the perfect opportunity.” I high-five her and make a mental note of this display of *deliberate spontaneity* in her teaching artistry. Ms. Liz continued, “They loved it, and so did I. I am really glad we saw you just now and could show you! What did you think of being a tree, M?” With a little smile and a side glance down the hallway, M exclaimed, “It was fun! We grew so, so tall! We blew all over in the wind! Then we went to sleep. Okay, let’s go!” Then she grabbed Ms. Liz’s hand and started marching away. With that we all laughed, and Ms. Liz said, “Well, I guess that’s that! Off we go! Lead the way, M.”

As they walked away, Sue and I look at each other, smiling and laughing. “It worked!” Sue exclaims. “It’s really working!” I say! We were giddy, excited at seeing the work from our weekend workshop already coming to fruition in this small way. I was excited to see Ms. Liz push aside the daily timetable and express her artistry through *deliberate spontaneity*. As we turn back to the paper we were discussing, I feel a jolt of pride, a burst of happiness. The school year thus far had felt like three, and the workshop had felt like a major risk. This little moment felt like a gift and a breakthrough and a bit of sunshine on a cloudy day. During a conversation a few weeks later Ms. Liz expressed to me that the workshop, where she was able to deepen her understanding of ecology, sustainability, and all the possibly ways they could be taught and expressed within the curriculum, had opened her eyes to the greater potential of ecological place-based education, that she was eager to continue to build her knowledge, and was looking into programs that might support her. It is important to remember that, just like our students need mentors and experiences in the natural world to develop their ecological mindedness (Carson, 1965; Chawla, 1999; Sampson, 2015), the teachers also need knowledgeable mentors and opportunities to grow and develop their own artistry as ecological place-based educators (Linnemanstons & Jordan, 2017).

The Best Job in the World

The red curtains frame the white screen where images from an entire year in Ms. Liz’s class flash by on the projector. Buddy stands off to the side of the screen, swaying gently, as several other teachers help prepare Ms. Liz’s students for their march across the stage. Their tiny graduation gowns shine emerald green in the stage lights, and mortar boards perch precariously on their small heads. I don’t know how I feel about the five-year-old “graduating,” but it sure is cute. As Ms. Liz takes the stage to address her class and the parents in the audience, a couple students wave at her eagerly. Others are looking for their parents in the crowd and wave enthusiastically when they catch their eyes. The students don’t seem to be listening, but the parents train their eyes and cameras on Ms. Liz when she starts her graduation speech.

> Dear Cyprus:
>
> We’ve had so much fun and I’ve had a wonderful year. You were just teeny babies when I first met you [her voice cracks], and now look at you: all dressed up and ready to graduate. We’ve spent lots of time in the ecodomes, we learnt about dinosaurs and safari animals, we’ve looked a stories, we’ve explored different jobs, and we’ve even been inventors, but above all we’ve had fun, and I am so incredibly proud of all of you, each and every one of you and all that you have achieved. The love and kindness that you have shown one another has blown me away, and I hope that you are always friends. To your mummies and daddies, I have loved working with you. Thank you for lending me your children five days a week. [I murmur with appreciation of this comment]. We’ve a really good bunch. And finally, thank you to my super stars [she looks teary eyed at her students]. Thank you for making my job the best job in the world, thank you for making me smile and laugh how you do, and thank you for teaching me. Thank you for being my friends. You’ll always have a special place in my heart, and I will never forget you. In the words of Dr. Seuss, “Oh, the places you’ll go.” Now let’s get you graduated. Well done Cyprus.

The parents clap, and one by one Ms. Liz calls her students across the stage. For each of them she has a personalized memory, and parents laugh as she describes each of their children individually, with distinct perfection. She knows them inside and out, and she wears her big heart on her sleeve. They shake the Principal’s hand before they take a seat on the stage. I wonder what this day means to the kids, if it means anything more than a chance to dress up and walk on the big stage. They must know its special from the way the adults are crooning and clapping. I know it is an emotional day for Ms. Liz, as she told me that even rehearsal had her in tears. The end of the year is often this way: bittersweet. After a year spend creating a community from a group of individuals, we send them off with handshakes and high hopes. For many educators, myself included, the end of the year exposes the meeting point between what has happened already and every possibility that lies ahead.

The Snail in the End

The following vignettes draw from my experiences in my last days at Desert School. At the time that I collected the data that went into these descriptions, I didn't know I would soon lose my job or have to learn to approach my research from a whole new perspective. At that time, I was filled with the giddiness and excitement of an educator in the last days of the school year. I was filled with hope and drive for the upcoming school year, looking forward to working with my colleagues to further develop our community towards sustainability and ecological mindedness. That (clearly) did not come to pass, and I came to see the irony in some of my last memories of Desert School, in light of my personal experience. I try to capture some of that here, the hint of bittersweet that comes with any change. Thankfully, in reconstructing these experiences, I realized that nature was still my greatest teacher, showing me how to let go, to acknowledge ends as new beginnings, and the take time to celebrate the harvests of the season, no matter how small. There is less formal interpretation to these last three vignettes, and I encourage the reader to let go for a moment more, to sink fully into the moment, and to search with me for meaning in ambiguity.

Garden Mirage

After the crowds of parents dispersed with their tiny graduates in tow, I found my way out to the garden. The daylight was fading, and the crickets were starting to sing. In the past few days, the weather had changed dramatically. The last spring breezes had given way to summer’s swampy heat, and soon my shirt was soaked through with sweat. I took a moment to listen to the rustling of the trees, their branches full and heavy with greenery. The sweet breath of jasmine wafted through the garden, and bees buzzed lazily on the last purple basil flowers. Pomegranates hung ripe and red in the branches, coming to their fullest color as the summer heat warmed up. I worked slowly, putting the garden to rest as the year drew to a close. All of the garden beds were harvested of produce and mulched against the coming heat. The shade cloth was drawn across the remaining lettuce that had just about bolted. Palm fronds lay protectively over the top of the palapa, creating a secret reading nook that likely wouldn’t be used until next winter. I noticed a small mound near one of the classroom windows that looked out onto the learning garden. Thinking it is a child’s dropped toy, I walked over to pick it up but drew my hand back at the last moment. Instead of a stuffed teddy bear, it was a small brown nightjar – a bird – lying motionless on the ground. Its head was bent at an unnatural angle, and its beak was crooked with the faintest bit of blood. It was no more in this world, and I gently cradled it in my hands as I walked it into the garden.

Nightjars were known to migrate through these parts, and its possible this bird had lost its way, then gotten further disoriented by our human made oasis in the middle of the desert. The reflection of the green trees in the golden windows must have been the last sight it saw as it glided into the beyond. At the base of the arbor, underneath the last of the watermelon and grape vines, I dug a small hole and placed the bird inside. I covered it with sand and patted the mound gently with both hands. I couldn’t help but think that even the most convincing reality could turn out to be nothing but a mirage in the end.

One Last Day

My last day started like any other July day in Desert City: with a bright blue sky and high humidity. There were two days left in the school year, and everyone was at once uneasy and excited. Before the start of the day, I held my last professional development session with the learning support teachers. I took them out to the ecodomes and gave them different colored paint sample cards from the local hardware store. They moved about the dome searching for plants with those specific colors, and I heard them cry out with delight when they find examples of "butter cookie, saltwater, and Osage orange" amongst the greenery. They spent time outlining different activities they could do with the same materials, and then they rushed off to class with a flurry of "thank yous" and "see you soons." I wouldn't, but I didn't know that then.

Once the day was underway, the rest of the SLT and I spent a bit of time looking at the onboarding schedule for the coming school year. We fleshed out the rest of the schedule for new teacher orientation, and I reviewed the work I had led the team through yesterday on priority setting around ecoliteracy and sustainability across the school. We are in this together, it seemed. But now I'm not so sure that we were.

After the SLT meeting, I snuck away to get outside and get some hands-on work done. For weeks I had been harvesting seeds with students whenever we found them ready. Now, I had a full collection of plants waiting to have their dried seeds removed, sorted, labeled and stored. As I worked, students started streaming out of the school headed towards the auditorium and recess. I stepped outside holding a bunch of beans still attached to the dried vine in order to supervise as I worked. When I did, several students approached me to ask what I was doing. E, with her big blue eyes and shiny blond hair stood a little too close, as usual. "What are you doing? Can I help?" she asked in the same breath. “Of course!” I replied happily, and several other students joined in. We picked pods off the vine, cracked them open, and shook the white beans out into a large bowl. The students chatted to one another as they worked. We paused to look closely at one seed, noting the hilum, or seed scar, marring the otherwise smooth landscape. When I explained what it was, they laughed at how similar it was to a belly button. My experience teaching and deep knowledge of ecology and environmental education allowed me to engage the students at just the right level, while sparking a bit of curiosity as well. As we worked, several other students approached, asking if they could join. We eagerly welcomed them in, and soon it was a regular seed saving party. We broke open beans, peas, and okra. We shook the seeds from fennel, dill and onions. We delighted in the smell of basil as we rubbed the plants to make the fine black seeds fall out. All the while they chatted and laughed, sometimes about seeds and gardening, sometimes not. They all agreed that seed saving was more fun than they thought it would be, and that they wanted to grow all the food next year. We were looking towards the future, and I couldn’t wait to be there with them. Suddenly, the flow of students from the canteen to the auditorium reversed, and lunch was over. The seed saving party would have to end. Our hands were raw and our fingertips sore, but we knew we had the promise of another years’ crop stored safely away until the next school year began.

After the seed party, I popped into two of the last project celebrations. Mr. Kit celebrated the Chocolate Project with his students and their parents, and his room roared with laughter as students showed off their knowledge of the digestive system and the science of chocolate. As always, his artistry and creativity were on full display. In the room across the hallway, student-created videos presented moments from history as if they were breaking news. I looked forward to what this project might look like next year, as one of the teachers had spoken with me recently about really wanting to make it more place-based. We had started listing important local historical events and people that she could integrate into the project. It seemed like everything was coming together, and teachers were starting to bring their own ideas into their projects. My heart felt full as summer break neared.

That afternoon I was scheduled to meet with a new board member, and I gathered my notes before heading to his office. It was only when I entered the room that I realized something was wrong. Two men – the board member and another – sat at a round table; the blinds were drawn, blocking the view to the hallway outside the office. “There is no easy way to say this,” the board member began in a grave voice, and I sat up straighter in my chair. The other man, who himself had been recently “relocated” to another project within the Desert School company, slid a manila folder towards me, without letting his fingertips leave its surface. “I recommend you read these *very* carefully,” he said, eyeing what were surely contractual papers with a stern look.

The board member rolled his eyes. “Really, you can take a look, and sign them before you leave today. It’s quite straightforward. You are officially on ‘gardening leave’ as of this afternoon. Your settlement details are enclosed for you to review.” The irony of being placed on “gardening leave” as the garden designer and Director of Education for Sustainability did not go missed despite my fury. The other man shook his head slightly and said in a gentle voice, “Take them home. Read them over. Ask questions.” “How can you…” I started before trailing off. “You are breaking contract. This is, this is…how can you do this?” I stammered, while miraculously maintaining composure. “Restructuring,” was all the board member offered, then, “You’ll be compensated,” as if a bit of money would make this all make sense. I refused to cry or shout, although my eyes blazed with anger and my heart ached with sadness. I collected my notebook and the manila envelope and slowly pushed my chair back from the table. I said nothing as I turned away from the two men and walked calmly out the door.

~Sandstorm~

As I quickly packed up my things from the SLT community office, my head pounded with rage. I stuffed books and papers into bags, grabbing as many of my belongings as I could before storming out of the school fifteen minutes before the end of the day. The rumble that had filled my dreams for months now filled my ears.

As I raced to get away from the school, I felt the wind shift and the earth groaned beneath me. The growl of powerful engines screamed from the east, and the sky turned yellow as sand filled the lower atmosphere. Lalo barked furiously somewhere near the garden, and I turned towards her. Suddenly a tower of falcons swooped out of the sky, flying along the edge of the storm, carrying it forward. They were followed by a caravan of camels, a herd of oryx, and one tiny red fox. I realized that the animals were not pulling the storm forward, but rather they were trying to outrun an army of white four-wheelers that bashed through the dunes without care for any living creature they disturbed along the way. The band of SUVs swerved and pounced as they chased the critters down, flinging more sand up into the growing storm as they pressed forward. Just like in my dreams the vehicles lurched up each crest and plunged into each valley below without the slightest hesitation, leaving scars across the landscape, deep and dark. Through one window I was able to make out the shape of a man with a chameleon. His dark sunglasses obscured his face, but he seemed to be staring right at me while the creature on his shoulder flashed through a veritable rainbow of colors before turning the absolute bluest black.

As the cars passed through, the sandstorm grew in size and strength. The dunes, too long regarded as just a bunch of sand, had been destroyed, their ecological integrity shattered by too much too soon, their protective layer smashed apart by exhaust fumes and rubber tires. Now the dunes crumbled and disintegrated, and the desert wind did what it does best. It blustered and raged and whipped and whistled. It gusted and screamed and whirled and stormed. The air was filled with yellow, gold, and white particles, and it became hard to breath. I covered my face with my scarf, and squeezed my eyes closed. I could no longer hear Lalo over the raging tempest, and I fought my way forward through the storm with growing worry.

Almost as quickly as it kicked up, the wind calmed, then quieted, then settled. Grains of sand fell like rain until all that was left was the lavender of the evening sky and the glimmer of stars high above. In the dusky light, I made my way to the Learning Garden, wading through piles of sand that drifted into small mountains. When I reached the place where I knew the Learning Garden should be, there was only a heap of rubble and sand. The arbor lay in pieces, crushed beneath the fallen trunk of the giant neem tree. The garden beds were nothing but a mangle of wood among the bricks that once lined the paths of the garden. Boulders and stumps were buried below meters of sand in some places, and everywhere seeds and leaves lay scattered.

I called for Lalo at the top of my lungs, once then twice, then again and again until my voice grew hoarse. I flung aside stone and sticks and broken palm branches until my fingers blend. I listened and heard nothing. A dung beetle scuttled across the shifting sand. I screamed Lalo’s name again and pressed my ear to the earth, my heart breaking slowly into pieces. I lay down on the ground, sobbing. My tears formed a river that started at the bridge of my nose then rushed across the ground in front of me, picking up sand and boulders as it raged across the garden before abruptly flowing out into an ever-widening delta.

I don’t know how long I cried, but I’m sure there is a riverbed in a desert that was carved by my tears. When the tears stopped, and the river slowed to a trickle, I was able to feel my heartbeat in the sand beneath me. Then I heard a whine from below the wreckage. It was Lalo. I began to dig. I tossed aside leaves and mud and branches. Sand filled my mouth and eyes. Rocks scraped my arms, and slivers cut across every finger. The falcons chased out by the storm flew down from an unseen perch and helped me carry away the debris, before flying off again. Lalo cried out again, and I continued to dig. For each bit I removed, sand filled in the gap, and I was certain I might never reach her again. I called out for help, but no one was there to hear.

As the sky darkened to blue, then black, I continued to dig, feeling more heartbroken with each passing moment. Lalo no longer responded to my calls, and tears again flowed freely from my eyes as I imagined the worst. Just as my arms started to seize with fatigue, there was a small voice behind me. I looked and saw the wild child from the camel farm, her dark hair a tangle of curls around her head, her tiny hands held out in offering. “Remember me? I can help,” was all she said. Together we dug with renewed urgency. She was stronger than she looked, like her mother had once told me, and she knew exactly which roots to pull, which branches to leave in place. Her spirit jolted me through with hope. She brought with her the wisdom and hope of every child I had ever taught, every child I had yet to teach. “There,” she said, her eyes flashing blue then brown in the evening light, and she smiled broadly as she pointed into the darkness hole in the sand. Just then there was a movement underground and soft growl as Lalo emerged from the earth. Sand poured off of her head as she winked her blue eye, then her brown eye, and shook her head in disbelief. I turned to thank the wild child, but she was gone, carried on the wind back towards her own desert oasis and the safety of knowing the place in which you dwell.

Lalo barked to get my attention, and I turned to look at her. She was standing tall, if looking as bewildered and stunned as I felt. Suddenly she shook vigorously, sending sand flying in every direction as her fur shuddered and twisted. She stamped her front feet, then she barked playfully. When she nudged my hand gently with her head, my heart surged with something like courage. When she sprinted off into the night without warning, I did the only thing I knew how to do. I set off after her, running tentatively and bravely in the direction that would hopefully lead us home.

CHAPTER V

THEMATICS, EVALUATION, AND IMPLICATIONS

Disruption and Resiliency

Disruption and change are a fact of life, just as much as are balance and equilibrium. Without disruption, change, challenge, and crisis, we – and by this, I mean all living things and the non-living too – could never have become the beautiful creatures and places we know and love. The wolves adapt to catch the nimble deer, and in turn the deer evolve over time the ability to outrun the wolves nine times out of ten. The slow and steady splitting apart of Pangea left Australia an isolated landmass in the middle of the ocean for millions of years, and because of this split some of the most unique animals evolved parallel to but entirely distinct from creatures found throughout the rest of the world. A fall prairie wildfire clears out masses of invasive multiflora rose and bull thistle, while leaving the mighty coneflower and wild lupine to blossom again in spring.

When the storm blew fast around me and the trellises fell burying Lalo – my vision - and the garden under piles of sand, I tried to remember the wolves and the deer. When I found it hard to breathe as I dug through the rubble, I tried to remember the dingo and the kangaroo, the coneflower and the lupine, and all that a different day might bring.

When I was a wildland firefighter some of the most exciting times, as an environmental scientist and nature-lover, were the days and weeks after a burn. At first the landscape would be scorched black with tufts of brown and a layer of silver ash.

Every step raised up the smell of charred earth and puffs of dust. It seemed like nothing possibly could be alive. And yet…a week later, sometimes even less, I would walk out along the burn and find the brightest green shoots already rising up through the soil. As naturalist and author Gary Ferguson writes, “What at first glance might have seemed like calamity, like an ending, will in fact reveal itself to be a highly coordinated, intensely robust, multifaceted burst of creation” (2019, p. 195). While he was, in that passage, speaking of the way nature responds after a massive disruption – a wildfire in this case or the plowing over of a field – he is quick to make the connection between natural ecosystems and landscapes and humanity as part of nature. He writes, “And in wildfires I have found parallels to human life…I’ve also started trying to build clearer connections to what feels like my essential nature – to those core qualities that can withstand whatever challenges burn through…the consequence of disruption is growth” (p. 197).

While the metaphorical burying of the learning garden and the literal ending of my tenure at Desert School were rightful disruptions, I have done my best to use this opportunity to grow, as a person, an artist, an educator, and most importantly a living being on this beautiful earth. Once Lalo and I had dug out from beneath the sand and rubble, and started the long walk home, it was time to make sense of all I had experienced within the Desert School ecology. Laden with the heavy load of the teachers’ experiences and my own stories, I trudged and sometimes sprinted forward, searching for clarity and hoping to “build clearer connections” to what felt like an expression of the essential nature of artistry within ecological education, and then to make sense of what that expression means for the improvement of ecological education.

In the previous chapter, I provided descriptions and interpretations of the situation – the starting of an ecological place-based school – from several perspectives, mine as well as those of the three teacher participants, Mr. Kit, Ms. Tanya, and Ms. Liz. I interpreted these experiences through an ecological aesthetic lens and organized them using four of Eisner's five dimensions of the school ecology; the intentional, structural, curricular, and the pedagogical (1992, 2017). I presented the themes that emerged from the examination of participants intentions (hopeful vision, holistic learning, and responsive action), as well as the complementary set of themes that organize the artistry and creativity expressed through place and their practices (imaginative diligence, open-hearted connection, and deliberate spontaneity). In this chapter, I will further interpret and evaluate the findings as they relate to my research questions. While in Chapter Four, I presented the findings in order to address matters of description, in this chapter I will further connect interpretation to scholarly theory, as well as address the evaluative question of what this all means for education. I will offer an evaluation of the findings in light of what is useful here for the improvement of ecological education in general, and teacher education in particular. Finally, I will address the import of experimenting with magical realism within the methodology of educational criticism, with a particular emphasis on educational criticisms dealing with ecological education (Moroye, 2007).

Overview of the Study

Throughout this dissertation, I have been exploring ecological place-based education (ecoPBE), the term I use to elaborate on place-based education (Sobel, 2005) by emphasizing the importance of acknowledging and developing an understanding of ecological concepts through connection to place and local natural ecologies. While some may find this term, ecoPBE, redundant, I believe it is important to state clearly my belief that we must not only learn to connect to and love the people and places around us through place-based education (PBE). I believe it is equally imperative that we use PBE to develop a deep understanding of the ecological concepts and systems – such as change over time, nested systems, diversity, and equilibrium and limits – that organize and govern our world so that we may be better equipped to creatively and intelligently apply this knowledge to create a more just and sustainable world.

EcoPBE is by its nature a disruptive force within education. Orr (1992) writes that the purpose of Earth-centered education is "that quality of mind that seeks out connections. It is the opposite of the specialization and narrowness characteristics of most education" (p. 92). Greenwood (2010) impresses upon us the often misunderstood and marginalized place of ecological education primarily because of its purpose of disrupting education as we know it. As wildfires rage across continents and floods pour through our streets with greater frequency, our own lives are disrupted again and again by nature. Our most reliable life-giving force suddenly seems unfamiliar in its ferocity and power, disrupted by the often invisible but certainly cumulative impact of human activity on the Earth and life as we know (Goleman et al., 2012; Orr, 1992). Perhaps now, more than ever before, it is necessary to examine this disruptive educational force, ecoPBE, to listen to voices from the margin as we educators, curricularists, and human beings, seek new ways of educating for a more sustainable, just, and beautiful world. This study examined the experiences of educators bringing an ecological, place-based school to life in an unexpected environment in some of the most precarious times in the history of the world.

Ecological place-based education is a broadly interpreted term that brings together dimensions of environmental education, sustainability education, and civic action education (Demarest, 2015; Smith, 2002a, 2002b, 2016; Sobel, 2005). Place-based education was brought to familiarity most recently by Sobel in his landmark book by the same name. In it he defines place-based education (PBE) as “the process of using the local community and environment as a starting point to teach concepts in language arts, mathematics, social studies, science, and other subjects across the curriculum” (2005, p. 7). This idea built upon the work of many naturalists and ecologists, educational theorists, and sustainability practitioners, most notably in the years since the 1978 Tbilisi Conference which brought the first formal definition of environmental education to the world (Smith, 2016). Importantly, place-based education is for some also deeply connected to traditional knowledge and indigenous ecological understandings that bridge the gap between humans and nature, between the intellect and the heart, between schools and communities (Cajete, 1994; Kimmerer, 2013; Orr, 1992). This is something that I believe is often overlooked or underappreciated in the relentless emphasis on developing rational thinking and STEM-relevant skills and measuring academic success through test scores and reading levels (Gruenewald, 2005; Lieberman & Hoody, 1998). Similarly, ecological education focuses on developing ecological literacy, which can be thought of as a way of reading the world and making sense of our situations (Orr, 1992). Guided by a deep understanding of the natural systems sustaining life on earth *and* a heart-felt connection to the people and places around us, ecological education provides a space where education can happen in relationship *with nature* (Moroye, 2007). In this study, I have emphasized the *ecological* integrated within place-based education. I therefore define ecological place-based education (ecoPBE) as teaching and learning that happens in the places where society, politics, culture, and the environment meet in intricate and interdependent ways. EcoPBE is rooted in the heart-based elements of creativity, connection, imagination, hope, wonder, and love, as much as it is guided by ecological knowledge and scientific understanding (Leopold, 1949; McKibben, ed, 2008; Orr, 1992).

While the majority of the present literature focuses on how experienced ecological and place-based educators teach the way that they do, this study aimed to examine the experiences of educators new to this approach to teaching and learning, in a way flipping much of the relevant scholarly research on its head and examining the situation from a new perspective. In particular I was interested in building off the idea that “all education is environmental education,” the infamous saying written by David Orr, which is often used to underscore the need for “education of a certain kind” – that is earth-based – to be brought more fully into our schools (Orr, 2004, p. 7). As an experienced ecological educator, I often wondered at the discrepancy between this term and the reality in which very little education truly was “environmental,” except in the negative sense imbued by the null, untaught curriculum (Eisner, 2002a). Much of our current educational frameworks can in fact be thought of as anti-environmental, as they draw on models of continuous progress and limitless growth, encourage futurist “technology will save” thinking, utilize ecologically incongruous practices, and focus on developing skills for personal career success while neglecting opportunity to learn about and with nature through time outdoor in local places with inspired and caring ecological mentors (Bowers, 2001; Chawla, 1999; Leopold, 1949; Louv, 2005; Orr, 2004; Sampson, 2015). Alternatively, ecological education seeks to reorient the aims of education toward the wonderous and connective side of education, cultivating a comprehension of “interrelatedness and an attitude of care or stewardship” based on the “knowledge and feeling” inspired by experience in beautiful places, with uniquely diverse beings (Carson, 1965; Moroye, 2009, 2011; Orr, 1992, p. 92). As our attention is now so often being, willingly or not, reoriented towards the changing environment outside our school doors, I wanted to see how teachers *inexperienced* with this ecological approach to education would navigate the ins and outs of bringing an ecological school to life. My unique position as Director of Education for Sustainability at this school gave me an optimal vantage point to not only observe their situations, but to also share and reflect on my own situation as an interdependent member of this school ecology.

In addition to my interest in examining the experiences of educators trying on ecoPBE for the first time while nurturing an ecological school to life, I went into this study with a fascination of the artistry of teaching, and the role of artistry in ecological education. I kept my eyes and ears trained towards the ways that artistry and creativity emerged, if at all, through the work of the teachers. My interest in this particular aspect of educational practice was driven by two things: my personal conceptual framework, that all teachers are artists in some aspect, and my belief that we *must* learn new ways of being and having in order to participate in the restoration of balance, equilibrium, compassion and justice in this rapidly changing world (McConnell Moroye & Uhrmacher, 2018). Eisner tells us that artistry is what emerges in the absence of rules (2002b), and more and more, the reliable rules that have governed our earthly systems – from the natural to the political to the economic – have grown questionable. Eisner also explains that artistry in education is important not just to provide students with meaningful and transformative experiences, but also because a teacher's artistry – their "disposition to play" – "opens up new possibilities" and "welcomes exploration and risk-taking" (2002a, p. 162). It is exactly this sense of play, exploration, and risk-taking that could help us address the current ecological crisis with greater imagination and care. In a sense, I envision a direct connection between educational artistry and the well-being of life on Earth.

To this end, five research questions guided this study. They are as follows:

Q1 What are the intentions and expectations of educators, including the researcher as participant, about their roles in a new ecological, place-based school?

Q2 How are these intentions and expectations realized, or not, within the school ecology?

Q3 What aesthetic judgements and creative attitudes do teachers and the researcher express as they adapt to a new school and ecological, place-based curriculum?

Q4 What is the import of using magical realism within educational criticism and connoisseurship?

Q5 What are the implications of the findings for ecological, place-based schooling in particular and education in general?

Interestingly, the fourth question emerged during the course of the research as a response to the literary strategy of magical realism I used to describe and interpret some of the findings of the study, with specific connections to artistry and ecological education. In order to address the questions above, I used the arts-based qualitative research methodology education connoisseurship and criticism (Eisner, 2002a, 2017; Uhrmacher, et al., 2017).

Educational connoisseurship and criticism (herein educational criticism) uses an arts-based approach to guide the private appreciation and public disclosure of educational situations for the improvement of education (Eisner, 2002a, 2017). In particular, the critic is tasked with bringing the intricacies and incongruities of what they have observed, noticed, and otherwise seen with regards to a particular situation to the rest of the world. “The critic’s task is to function as a midwife to perception,” Eisner writes (2002a, p. 213), to help others see what they would otherwise miss without the guidance of the critic’s particular connoisseurship and discerning eye. My particular connoisseurship in this study emphasized the ecological and aesthetic dimensions of educational life. I drew on my in-depth knowledge of ecological systems, place-based education, curriculum theory, and integrated my appreciation for ecological aesthetics – the continuous interplay between ecological systems, imagination, and transformational educational experiences (Dewey, 1934). This lens draws on the ecopedagogy defined by Orr, Finley, Leopold, Carson, Sobel, Smith and many others that is grounded in “care, sensory experience, action, and pluralism” (Finley, 2011, p. 308), that is the foundation of ecological place-based education.

Educational criticism is organized by four dimensions which give shape and substance to the criticism and guide the critic through the educational evaluative process (Eisner, 2017). The four dimensions are description, interpretation, evaluation, and thematics. In Chapter Four I provided descriptions and initial interpretations of the findings that arose from this study. I presented the themes that emerged through both magical realism as well as literary vignettes more common in qualitative research, and particularly within educational criticism (Glesne, 2016; Uhrmacher et al., 2017). In

Chapter Four the descriptions and interpretations were guided by the questions: “How is life lived in this classroom? What is it like? How does this classroom operate? What does this situation mean to those involved” (Eisner, 2002a, p. 226 and 228). I aimed to describe what was observed and experienced in such a way as to draw the reader fully into the situation so that they might “participate vicariously in the auditory and visual qualities of the layered web of life” (Eisner, 2002a, p. 226). As explained above, I drew on my specific connoisseurship lens of ecological aesthetics to inform the interpretation of the situation for the participants with a particular focus on artistry in education. I also experimented with magical realism as a literary mode in an attempt to artfully create meaning from within a difficult situation to inform ecological education from a different perspective, through a unique voice. As such, this particular criticism aims to create meaning more than it seeks to disclose any individual truth. Guided by Barone and Eisner’s (2012) assertion that arts-based researchers communicate clearly with their audience as to how they want their work read, I have emphasized throughout this work that it should be read knowing that my intention was to convey meaning more than truth. As explicated in several places throughout this dissertation, I employed a fictive literary construction (Barone & Eisner, 2012) to tell certain parts of our (the teachers’ and my) collective stories. The use of magical realism as the specific literary mode further complicated the fictional rhetorical structure by blending reality and fantasy in such a way that it is not always possible to tell what exactly is real and what is fictional (Faris, 2004). The fictional elements were further juxtaposed with evocative, richly descriptive nonfictional literary vignettes (Ellis, 2004; Glesne, 2016; Stake, 1995; Uhrmacher et al., 2017) in an attempt to create the most comprehensive and coherent story possible. What is most important in approaching this study and it arts-based representation is that the reader let go of their need to categorize fact versus fiction in the reading of this work; instead I have encouraged the reader to suspend their belief and look for the bigger significance offered by this study. That said, I have also offered a visual sign (~) as well as a literary indication (Lalo) to help the uncertain reader navigate through the real and fantastical with greater clarity. If either or both are present, there is undoubtedly an element of magic at play.

In Chapter Five, I respond to several additional questions posed by Eisner that help guide further interpretation and evaluation of educational situations: “What ideas, concepts, or theories can be used to explain the major features of the educational criticism? What are the larger lessons offered here? What does it all add up to?” (Eisner, 2002a, p. 229). My responses to these questions will be organized around my five research questions in order to systematically examine the findings in light of the themes presented and the interpretations offered within this criticism as they connect to my own experiences and the literature. Finally, I will present an evaluation of the findings in light of my fourth and fifth questions: *What is the import of using magical realism in educational criticism and connoisseurship? What are the implications of the findings for ecological, place-based schooling in particular and education in general?* I draw on a mixture of ecological, educational, and various arts-based and creativity concepts and theories to inform my evaluation.

This study examined the experiences of four participants – three teachers and me as a participant-researcher – as we started a new international school focused on building ecological literacy and sustainability values. The school promised to deliver a project-

and place-based approach built upon three pillars of ecological literacy, sustainability, and environmental justice. Desert School was located on the outskirts of a large city in the Middle East, and it was in its inaugural year during the time of this study. The teacher participants were all British with varying levels of experience in school. All teachers were classroom teachers; two (Mr. Kit and Ms. Tanya) were “primary” teachers; Ms. Liz was an “early years” teacher. I was not a classroom teacher, although I spent much time in classrooms and outdoors with teachers and students. I was the Director of Education for Sustainability, and I was responsible for overseeing the design, implementation, and evaluation of the ecological curriculum and teacher development at Desert School. I chose participants based on purposeful volunteer sampling (Jupp, 2006). All members of the teaching staff, including other members of the Senior Leadership, were invited to participate via an informational email and follow-up announcement at two staff meetings. The three participants described above decided to participate.

I conducted all observations during the spring term for 2019. I initially worked with each teacher one at a time, but several disruptions to the school schedule over the course of the term led me eventually to simply observing the teachers as was convenient to their ever-shifting schedules. This meant that towards the end of the study, I was at times observing all three of the teachers in a single week. All of their initial interviews were conducted individually, using a semi-structured interview schedule (Appendix A), and they were recorded digitally and transcribed by hand. I took handwritten notes on all observations and follow up conversations. A final interview was conducted in the Fall Term of 2019 with two of the participants, off campus, using a semi-structured interview schedule that was specifically designed for each participant. I was unable to conduct a final interview with Mr. Kit due to time constraints on his end, although I did present him with the option and the interview questions.

Two additional participants joined my study as “others of similarity” in the last month of data collection (Chang, 2016). These participants provided a form of peer review and debriefing, as well as helped me to examine my findings in a more holistic sense. I conducted semi-structured interviews with each participant (Appendix A), and I was able to observe one participant in person at their school (different from Desert School) in Desert City. While their experiences are not included heavily in this study, their participation, through one on one interviews and observations, helped me to make sense of the findings related to my own experience with greater clarity and honest reflection in light of the upsetting and unexpected cancellation of my position at Desert School (Glesne, 2016).

Before moving on to the formal discussion of the themes and research questions, I want to point out that this study offered a particularly unique take on educational criticism as a methodology for two reasons. The first is that this criticism incorporated not only the more “traditional” description and interpretation of others’ experiences in education (the teacher participants), but it also offered description and interpretation of my own experiences as a participant-researcher through auto-criticism.

The history and theory informing the emerging subgenre of auto-criticism and the rationale for using it was described in greater detail in Chapters One, Two, and Three. Briefly described, auto-criticism is an arts-based auto-qualitative approach to educational inquiry in which the researcher focuses on examining their experiences in a particular setting in a particular role. Rezac, who conducted the first auto-criticism dissertation, describes auto-criticism this way: “Auto-criticism seeks to ask; what is our role in what we contribute and how do we shape our own story? [T]he lived experience is the expertise of the researcher and the inquiry of it the path to understanding. An ‘interpretive frame’ is created to include ‘both the researcher’s point of view as well as the theories she applies to the situation’ (Uhrmacher et al., 2017, p. 42)” (2019, p. 18). On paper, auto-criticism may seem rather straightforward; simply apply the dimensions of educational criticism to one’s own experience and tell the story. In practice, auto-criticism is a complex process of reflecting, remembering, recording, and discerning what needs to be shared, and how. Because I was incorporating auto-criticism into a larger educational criticism, I also had to figure out the best way to weave these two disparate but complementary aspects of a single study together into a coherent story. Again, I looked to Rezac’s experience, and I was encouraged by her use of painting and journaling as both a process and a product. She evaluated this experience with arts-based research and auto-criticism, writing, “The representation of work is best served in a format that allows deep access to self-inquiry, reflection, and critical valuing, whatever form that takes for the researcher as participant” (2019, p. 20). For me, this was the blended use of literary vignettes and magical realism to “reconstruct” the whole experience of the teacher participants and my first year at Desert School (Barone & Eisner, 2012, p. 113). In fact, in its final form, this educational criticism may be viewed by some as more of a larger auto-criticism with traditional educational criticisms interwoven throughout the fabric of the story.

The second element that makes this educational criticism unique is that I experimented with magical realism as a form of fictive narrative construction (Barone, 2007; Barone & Eisner, 2012) in the description and interpretation of my auto-criticism as well as certain aspects of the teacher participants experiences. Works of fiction as research are, and have always been, contested within the halls of academia, being described as a "no-no, a mode of expression…that is simply off limits" (Banks & Banks as cited in Barone & Eisner, 2012, p. 101). And yet, I know that magical realism in particular, and a fictional approach in general, proved valuable and important in this study. I also believe that there are important implications for ecological education beyond this study that were illuminated because of this fictive approach. As Barone and Eisner (2012) write, "Works of fictions may indeed, through their recasting of the empirical particulars of the world…disturb and disrupt the familiar and commonplace…and redirect the conversation regarding important social issues" (p. 101). This aspect of the criticism becomes particularly important when I discuss my fifth research question which explored the import of using magical realism within educational criticism. Finally, as I reflected on my experiences of auto-criticism with my research advisor, we realized that using magical realism also had important and unexpected implications for both ecological education as well as for the methodology. These implications will also be discussed in this chapter.

Discussion of Themes and Response to Research Questions

In Chapter Four I provided thick and imaginative descriptions of the educational situations observed at Desert School in order to answer Eisner's (2002a, p. 226) guiding questions: How is life lived in this classroom? What is it like? I also offered initial interpretations of the findings as I attempted to answer the questions: What does this situation mean to those involved? How does this classroom operate? In this chapter I focus on addressing the following questions: What ideas, concepts, or theories can be used to explain its main features? What are the larger lessons offered here? What does it all add up to? (Eisner, 2002a, p. 229). In this Chapter, I respond to my five research questions in turn through a discussion of thematics and an evaluation of the findings with regards to useful ecological, curriculum, and educational theories, concepts, and ideas. It is important to note that ecological integrity (Moroye & Ingman, 2013) and community ecological artistry emerged as useful foundational themes to help draw out and illuminate additional thematic findings as they related to each of the research questions. These ideas will be discussed throughout Chapter Five as they relate to the thematics, evaluation, and implications for this study.

Research Question 1

> Q1 What are the intentions and expectations of educators, including the researcher as participant, about their roles in a new ecological, place-based school?

In Chapter Four I presented stories and vignettes that described the explicit and implied intentions and expectations of the participants. While each of the participants explained their intentions or discussed their expectations for their role using different language and example, three distinct themes emerged across our experiences: *hopeful vision, holistic learning, and responsive action.* These three themes were embedded within the foundational theme of ecological integrity. As such, it was impossible to completely separate any one of the themes from the others, and the following evaluation reflects the interconnected nature of our intentions and expectations for the school within our varied roles.

Hopeful vision. In his inspirational book, *Blessed Unrest,* Paul Hawken introduces the concept of the unnamed movement spreading around the world in response to the unimaginable destruction of resources and undeniable climate disruption shaking our planet. This movement, created by millions of individuals coming together to address different but interrelated issues around environmental wellbeing and social justice, is driven by a unique blend of realistic idealism, of pessimism mixed with a heavy dose of optimism. As Hawken (2008) writes, “If you look at the science that describes what is happening on earth today and aren't pessimistic, you don't have the correct data. But if you meet the people who are working to restore this earth and the lives of the poor and you aren’t optimistic, you haven’t got a pulse” (Kindle Loc. 170).

Few people get into environmental education because they think they will strike it rich or become world famous. Instead, what you will often find in any group of ecological educators is a deep-seated belief in possibility, in dreams of a better future. Teachers at Desert School, in discussing their intentions and expectations expressed a palpable sense of optimism within our varied *hopeful visions* for the school, a theme I believe represents the amalgamation of our big hopes and dreams for a school that we dreamed could become the best of its kind.

In my own practice, this theme was reflected in my expressed desire to create a school unlike any that had ever existed before, in which “a loving community of inspired ecological educators bring our vision of sustainability to life.” I also wrote of the intention to “rewrite the test,” alluding to my desire to create a different way of evaluating ecological literacy. I believed this to be a match with the intention of Desert School as well, particularly when other leaders spoke of us being at the vanguard of the future for environmental and ecological education. Mr. Kit envisioned an education that was “the best of its kind,” drawing on what he believed to be the strengths of the English National Curriculum as a well as a campus designed to inspire connection to nature and his expectation of a “free, kind of artsy place, with a creative approach.” Ms. Tanya spoke of a similar expectation of the school when she noted that she thought it would be more “hippyish,” with students and teachers “not wearing shoes and sitting around and meditating at random times of day.” For Ms. Tanya though, the real draw of the school, her *hopeful vision*, was rooted in the expectation that the Desert School curriculum would cover sustainability topics in more depth than other schools. In her final interview, after a year teaching at Desert School, she was even more adamant about this vision when she explained that teaching for sustainability was “relevant” and something we could no longer ignore as educators if we were to “give the best” to our students. Ms. Liz echoed the sentiments of the deep dive into ecology and sustainability that Mr. Kit and Ms. Tanya all intended and expected for their students. However, she also built on this *hopeful vision* to include her intention to make sure that her students, some of Desert School’s youngest, explored the world outside the classroom – in the gardens and ecodomes that had called her to move across the world – so that they didn’t get trapped in “academic, academic, academic.” For her, as well as for the rest of us, our *hopeful vision* of a truly unique school that was the best of its kind was tightly linked to another theme that emerged from our collective intentions and expectations, and that was our commitment to *holistic learning.*

Holistic learning. In identifying themes within the intentions and expectation of the participants in this study, I was uncertain if I would be able to find a term or phrase that would be acceptably broad yet conceptually specific enough to capture the essence of this second theme. After batting around terms such as connective education, systems thinking, and personalized learning, I realized that Ms. Liz had used the term “holistic” when describing the sort of education and classroom she intended to create at Desert School. While this inclusive phrase can be interpreted in many ways, I use it here in the way that Ron Miller, one of the leaders of the holistic movement does, when he writes, “Holistic education is not to be defined as a particular method or technique; it must be seen as a paradigm, a set of basic assumptions and principles that can be applied in diverse ways” (Rudge, 2008, p. 6). Holistic education brings together multiple worldviews and approaches to education in an attempt to imbue educational experiences with a sense of interconnectedness, wholeness, compassion, and spirit (Miller, 1992; Rudge, 2008). Interestingly it is often associated with ecological education through the works of philosophers, educators, and theorists, such as Orr, Naess, and Jardine, as well as Noddings and Dewey. I am uncertain that Ms. Liz was actually referencing the rich history of holistic education and its connection to ecological and place-based education when she used the term to describe her teaching. I do believe she was conjuring up an idea of student-centered, community oriented, and meaningful educational experiences, and therefore I believe that the term *holistic learning* accurately captures essence of the diverse intentions and expectations expressed by the participants of this study.

For myself, *holistic learning* sat at the core of my intentions within my role at Desert School, driving forward my own particular hopeful vision. I saw myself as the leader who would ensure that the whole of the curriculum was embedded with ecological place-based philosophies and experiences, just as we promised as a school. I expected that this would mean providing teachers with scaffolding, such as project outlines, ecoliteracy frameworks, and professional development, to nurture their own developing ecological literacy and growing confidence as ecological place-based educators. I considered *holistic learning* as a guiding idea behind the creation of unique and accessible spaces that would help students get out of the classroom walls and into the nature – even in the harsh Arabian desert. Importantly to me, this also meant meeting my teachers where they were through personalized professional development just as they would meet their students through personalized and responsive educational experiences. To me, the teacher experience was central in my intentions towards nurturing *holistic learning.*

The study participants also expressed the intention and expectation of *holistic learning* as a guiding theme for them in their roles at a new ecological school. Their focus, unsurprisingly, was less on their personal professional experience, and more on what *holistic learning* meant for the students in their classroom. Mr. Kit expressed the intention of *holistic learning* when he talked about his belief in bringing mindfulness and well-being to the classroom as a means to help students grapple with their needs versus their wants, as well as to help them deal with the frantic pace of their young lives in a big, wealthy city. Mr. Kit also implied an intention of *holistic learning* as integral to his role when he described his desire to be a part of a school dedicated to connecting students to nature, a place he once “felt at home” in as a younger person. For me, his desire to create a feeling of home within schools is at the heart of *holistic learning*, where the school, society, nature, and home meet to create a dynamic social experience (Dewey, 1897). Ms. Tanya’s expression of *holistic learning* centered more around her intention to feed sustainability education through everything that she taught, in this sense attempting to make sure that as much of the curriculum as possible addressed the “eco-focus” of the school. Her intention was to carry out the mission of the school in terms of developing kids who could think differently and who would be as “prepared as possible for the uncertainty that we are all facing.” For her, this meant shaping and building both her own knowledge and the students’ knowledge in a purposeful but complex way.

Finally, Ms. Liz’s intentions and expectations for herself and the school reflected *holistic learning* in almost everything that she did and said. In fact, Ms. Liz’s hopeful vision and the organic processes she used to guide her planning and teaching were very much interrelated to her idea of fostering *holistic learning* experiences for her students. In discussing her intentions and expectations for herself at Desert School, she was adamant that education in her classroom was not just about academics, but that it was about developing the whole child. She spoke regularly of using the ecodomes and gardens to help students connect nature outside to what they were learning inside and her expectation that real learning “engaged all the senses.” In order to do this, Ms. Liz, like the rest of us, expected to have to use *responsive action* – the third theme that emerged – as we brought our hopeful vision of holistic learning to life at Desert School.

Before moving on to the next theme, it is important to consider the connection between holistic education and ecological, place-based education. As my advisor asked, “Could ecological education be anything but holistic? How are they inextricably linked, or are they?” (McConnell, personal communication, 2020). This is indeed an important question to consider. In many ways, ecoPBE could not be anything but holistic. EcoPBE is by all definitions interdisciplinary, multifaceted, and location-specific, to name only a few of its features. It is grounded in multiple conceptual frameworks including ecological theory and land ethics (Leopold, 1949; Stone & Barlow, 2005), aesthetics (Finley, 2011), and social and emotional intelligence (Goleman et al., 2012). It integrates intellectual understanding of natural systems as well as heart-felt connection to the same (Demarest, 2015; Orr, 1992; Smith, 2002a, 2002b). It pushes back against contemporary notions of schooling related to disintegration, standardization, and control (Bowers, 2001; Gruenewald, 2002, 2003) as well offers and alterative to the dominant narrative of colonialism and science through indigenous traditional ecological knowledge (Cajete, 1994; Gruenewald & Smith, 2008; Kimmerer, 2013). In many – perhaps most – ways ecoPBE embodies the sense of interconnectedness, wholeness, compassion, and spirit that guide holistic learning.

While the ecologically minded (Moroye, 2009, 2011) educator might easily and readily integrate this notion of holism into their intentions around ecoPBE, I found it interesting that this was a theme that emerged even within the practices of inexperienced ecological place-based educators. I cannot be sure, because this study took place after teachers had been working with ecoPBE for approximately five months, if this intention of *holistic learning* was something that the participants brought with them or developed at Desert School, or some combination thereof. What I think is important to note is that the intention of delivering *holistic learning* is an expression of the *ecological integrity* of the Desert School community.

In teaching teachers to do ecoPBE in the past (read: not at Desert School) I have witnessed the application of ecoPBE to single subjects, usually science or environmental studies, or omitting an intentional focus on what might be considered spiritual, emotional, and artful elements of ecoPBE (Finley, 2011). These experiences suggest to me that not everyone – not all educators – necessarily approach ecoPBE as if it is *necessarily* holistic. Interdisciplinary – yes. Academic – hopefully. Connected to place – of course. But spiritual? Artistic? Emotional? Caring? Focused on developing the whole child? *Holistic?* These are topics that are often pushed to the side in contemporary schooling, crowded out by an already crowded curriculum (Gruenewald, 2002; Goleman et al., 2012; Orr, 1992, 2004). Still, the teacher participants named, in so many ways, *holistic learning* as a critical intention of their work at Desert School. For them, the holistic approach provided them with unique and personalized entry points into an otherwise unfamiliar educational landscape. They could approach ecoPBE not only through ecology and sustainability science, but also through mindfulness, sensory play, and cross-curricular exploration. Nurturing this belief in and comfort with holistic learning may prove important in bringing more teachers into the ecological "all education is environmental" education fold (Orr, 2004).

Responsive action. When I think about starting a school, I think about mess, chaos, and excitement. The process of starting a school, or any new adventure, must be thought of as a work in progress (Hodgkinson, 2011), and this was true for all of the participants in this study. In order to navigate this nascent world, we all expected that *responsive action* and a "try it out" attitude would support and guide us through the process. For myself, this meant being reflective and allowing things to emerge. I might say that this is very much a part of my own worldview, my particular connoisseurship which is very much comfortable with uncertainty. Part of why I joined Desert School was the lure of the unknown and the excitement of the journey of starting an ecological school from scratch. I expected to make a lot of mistakes and learn along the way, as an individual and a community, but I was okay with that.

The teachers also recognized the need to use *responsive action* in their role as educators at Desert School. For Mr. Kit, this meant making room in the curriculum to be responsive to student needs, and he often used that specific word. He spoke to me often of the need to plan a lot in the beginning, then see where the project went, based on student interest and curiosity. He called himself a “founder” when he spoke about his expectations for his role, noting that he knew the beginning would be crazy and chaotic, because we were “putting together the infrastructure” on which the school would grow. This idea struck me as so similar to that of my earlier mentor, Ms. Gold and her idea of putting the plane together even as we soared across the sky. Ms. Tanya’s expectations for her role were expressed in her whole-hearted commitment to “putting in the work.” She expressed that *responsive action* could be as simple as a weeknight spent researching to better answer a child’s question or a few hours spent reaching out to expert volunteers. She was committed to continuous learning, and she was often proactive in this intention. In this way, Ms. Tanya embodied the ecological concept of “development and change over time” or evolution that is echoed through the theme of *responsive action*. As author Barbara Kingsolver writes in the novel *Prodigal Summer*, “This ‘evolution’ business is just a name that scientist put on the most obvious truth in the world, that every kind of living thing adjusts to changes in the place where it lives” (2013, p. 393). Ms. Tanya regularly made adjustments according to her experiences in the place where she lived and worked, and over the course of the year, her growth as an ecological place-based educator was tremendous and inspiring. Ms. Tanya, as a middle leader also hoped that other teachers at Desert School would express similar dedication to growth and development, to evolution through *responsive action*, though she was often disappointed. I believe that Ms. Tanya's robust repertoire of systems as well as her dedication to learning about ecology helped to keep her organized in the chaos and allowed her to let learning experiences emerge (Eisner, 2002a). For Ms. Liz, life in an early years classroom was one continuous parade of *responsive actions* as her students literally and figuratively grew in front of her eyes. As an inexperienced ecological educator, Ms. Liz explained that her responsive action consisted of learning how to translate ecological ideas into "childspeak," often in the moment as her students encountered ideas of equity, interconnectedness, and cycles, for example, in their own way. She did not shy away from refocusing her plans because of a change in the weather or student's interest. She was committed to being responsive and saw the ecoliteracy framework as a tool for helping her to realize this intention within her dynamic early years classroom. Additionally, Ms. Liz used systems and structures in her classroom that felt both natural and useful while keeping the emergent nature of ecological education and early years learning at the forefront of her teaching.

Part of being an ecological place-based educator is learning alongside your students, responding in the moment to authentic learning opportunities with an understanding of the child and "active co-operation" (Anderson, 2017; Dewey as cited in Demarest, 2015, p. 36; Smith, 2002a). Over my career as an ecological, project- and place-based educator, I have grown accustomed to saying "I don't know" and then diving wholeheartedly into better understanding whatever it was I didn't know. As Demarest writes, "It is a challenge for teachers that the 'texts' [of PBE] are not always chosen ahead of time…Yet, often, *turning outward* involved this element of uncertainty" (2015, p. 108). Uncertainty, like flying the plane while building it, was something I was more than okay with, in the classroom or across an organization. It was exciting to see inexperienced ecological place-based educators also embrace and express this intention and expectation of responsive action through their words and practices. Creating space to nurture this is intention will be a focus of my response to my fifth question.

Ecological integrity. In order to move on from the examination of my first research question, *What are the intentions and expectations of educators about their roles in a new ecoPBE school?,* it is necessary to introduce the idea of *ecological integrity,* a theme I have identified as foundational and weaving through the three themes explicated above and the three that will be introduced related to my second research question. The themes of *hopeful vision, holistic learning,* and *responsive action* which organized the participants intentions and expectations, represent an expression of our beliefs about our roles at Desert School. I believe these themes emerged from an underlying *sense of ecological integrity* that was most of the time unspoken but implied by participants. While the themes were presented as separate and unique, I simply could not wrest holistic learning from hopeful vision or responsive action; they were intertwined and expressed as such through our practices. Moroye and Ingman describe ecological integrity as "the alignment of beliefs and actions, which materialize as dispositional qualities resulting from a comprehension of interconnectedness and ecological care" (2013, p. 604). These themes emerged from the care and interconnectedness that we understood, knowingly or not, as both evolving from and essential to the creation of an ecological school. If you are tasked with teaching from a place-based perspective, you necessarily have to connect to the people and place around you. If you are required to teach children to care about the environment and one another, you most likely try to express and embody care towards them and the world around you. Whether they were ecologically minded or not, Desert School teachers were expected to get kids outside, to teach "with the earth in mind" and otherwise operate through an explicitly ecological framework (Orr, 2004). In other words, this *sense of ecological integrity*, though nascent for most of the participants, was integral to their beliefs and practices at Desert School. This foundational theme will be explored more fully in the remainder of this chapter.

Research Question 2

> Q2 How are these intentions and expectations realized, or not, within the school ecology?

As I sifted through the data and saw the intentional themes of hopeful vision, holistic learning, and responsive action starting to take shape, I found myself returning again and again to the idea of ecological integrity. The more I considered what ecological integrity meant to me, the more I was able to recognize ecological integrity as the central theme shaping the realization of the intentions and expectations of the Desert School educators. As both an ecologist and an educationist, I hold two parallel understandings of this term in my mind.

In ecological science, ecological integrity is a measure of the resilience of a system, usually an ecosystem or ecological community. As ecologists grapple with understanding our drastically changing world, they have further defined ecological integrity as "the ability of an ecosystem to support and maintain ecological processes and a diverse community of organism" (Ecological integrity, 2020). Elsewhere within the earth systems sciences, ecological integrity is also explained as the ability of a system "to maintain natural ecological values… species and other important characteristics" despite disturbance and disruption (Ecological integrity, 2020). Greater ecological integrity means a greater ability to handle and respond productively to stress.

In education, ecological integrity has been described by Moroye and Ingman (2013) as one of the three qualities of ecological mindedness. According to them, ecological mindedness is comprised of three qualities: ecological care, interconnectedness, and ecological integrity. I am particularly interested in their explication of ecological integrity, which they define as "the alignment of beliefs and actions, which materialize as dispositional qualities resulting from a comprehension of interconnectedness and ecological care" (Moroye & Ingman, 2013, p. 604). Ecological integrity is not actually a separate quality, but rather it is an "outward manifestation" of ecological care and interconnectedness (Moroye & Ingman, 2013, p. 604). Ecological care can be understood as the caring relationships nurtured within a classroom which foster and grow from care for self, other beings (including plants and animals), and the earth. Noddings has identified and written extensively on six different types of caring (as cited in Moroye & Ingman, 2013). Moroye and Ingman (2013) have detailed the way that three of the six types or caring defined by Noddings (for self, other, and the earth, briefly) fit into the educational landscape through their work with ecologically minded teachers. Interconnectedness is most broadly defined as the myriad and diverse relationships that connect all things (Moroye & Ingman, 2013), and can be seen in the work of teachers as they strive to help students make connections between their learning, their past and present experiences, and their internalized understanding of the external world (Rogers, 2014).

Parallels to the educational ideas of care and interconnectedness can, perhaps unsurprisingly, be found within ecological systems. Care can be seen in the more familiar form of intraspecies, or even intrapopulation, nurturing, when a parent or relative actively cares for others within their species. There are many examples that could be offered, but I will give that of the wolf pack as one example; the entire pack will work together to protect, feed, teach and otherwise care for the young of a group (Ferguson, 2019). Care is also evident in mutualistic relationships found throughout ecological systems. Mutualism is a form of cooperative or symbiotic relationship in which two different species both receive benefits from their relationship, *and* their existence is dependent upon the other. These relationships are nature's creative take on energy efficiency and community well-being (Wessels, 2005). A familiar example of mutualism is that of flowers and their numerous pollinators, such as bees and birds. The animal gets a sugary substance necessary for their livelihood, and the plant benefits from having its pollen, and therefore DNA, spread far and wide. Interconnectedness and care are not just part of natural systems; they are in fact inextricable from ecology, which is the study of living things and their *interaction* with their environment, including other living beings and the non-living aspects of their surroundings.

What then is the connection between the themes of *hopeful vision, holistic learning, and responsive action* and the overarching themes of *ecological integrity*? First and foremost, I recognized in those themes my own *hopeful vision* of nurturing a loving and inspired community of ecological educators whom I expected to bring ecological place-based education to life through their practice. What I wanted to create was indeed a community that exemplified ecological integrity: resilient, caring, interdependent, and imaginative. I would consider this my greatest intention, quite possibly influencing every other decision I made. As I watched the teachers within this community learning to move through the landscape ecological place-based education, I recognized an experimental and emerging disposition of ecological integrity as evidenced by the presence of ecological care and interconnectedness in their intentions and practices. In other words, the teachers and I were implementing and experimenting with our own versions of ecological mindedness within the Desert School curriculum.

In the following section, I will connect our teaching intentions and practices to the work of Moroye (2007, 2009) and Moroye and Ingman (2013) around ecological mindedness across the curriculum. My rationale for applying their framework of ecological mindedness as an evaluative lens is a nod towards the fact that, although Desert School was not a traditional school setting, the teachers themselves came from traditional school settings and were learning their way around a new land, figuratively and literally. Similarly, I was learning to operationalize my own ecological mindedness in a landscape equally unfamiliar but for different reasons. Moroye and Ingman offer ecological mindedness as “a [potential] bridge between ecological reform efforts and the current practices in traditional K-12 schools,” and I believe Desert School is as good a place as any to start building that bridge (2013, p. 589).

Ecological mindedness and hopeful visions. When you decide to travel through a new landscape, there is most often a vision that guides you along your way. Sometimes it is the vision that sent you on the quest in the first place. Sometimes you only come to recognize your vision when you are already on your way. Sometimes your vision finds you when you stop to rest and reflect along your long and crazy journey. A vision is by nature not something tangible. It is something we describe, express, and share with others through words and actions. Hammerness studied the impact of teachers' personal visions on their professional growth and efforts towards school reform. She describes a teacher's vision as both a guide and a measure, as well as a way of making sense of the present and past with regards to one's vocation (Hammerness, 2001). The teachers she studied most often used their vision as a motivator – something to strive for – as well as a prompt to focus teaching practices. Mr. Kit, Ms. Tanya, and Ms. Liz arrived at Desert School with different experiences and unique goals, and yet they each came with some version of a hopeful vision for their role at Desert School, their students, and the future of the world. As they worked to realize these hopeful visions through their words and actions, their practices were undoubtedly expressions of ecological care and interconnectedness.

Within the structural dimension, we were able to realize our hopeful vision through the creation and use of spaces that emphasized care and interconnectedness. I worked tirelessly with architects, landscapers, permaculturalists, and gardeners to create and maintain a variety of green spaces around campus that would support the development of a loving community of inspired ecological educators. With this team of professionals, I created interactive, useful, and beautiful spaces where students could learn to care for the world around them, where teachers would go to connect with nature and find inspiration for teaching, and where our school could show itself to be a remarkable example of the what is possible in education – all potential outcomes my *hopeful vision* might generate. Once the spaces were built, my gardening team and I spent hours tending to these spaces with patience and purpose, with the intention of giving our community the best possible space in which to teach and learn. For me, as well as for my gardening team, caring for the grounds was also an act of love towards the world around us, our expression of interconnectedness and interdependence with the living and non-living elements of Earth.

Mr. Kit embraced these “green spaces” in his teaching practice, intentionally integrating the various gardens and ecodomes into daily lessons. In one instance, described in Chapter Four, Mr. Kit brought his class to the Reflection Garden for their daily mindfulness session. On this particular day, he guided students through a mindfulness practice, encouraging them to take time to breathe and consider the flame in front of them while listening to the sounds around them before leading them through a review of their understanding of light and sight. I recognized his choice of the Reflection Garden as an expression of care for his students; he chose to bring them to one of the most beautiful and relaxing spaces on campus even though it was more work for him than simply holding mindfulness in the classroom. Additionally, his commitment to the mindfulness sessions in general showed his care for his students’ health and well-being. While some teachers forwent the scheduled mindfulness session, thinking no one would notice their omission and believing class time was better spent on “content,” Mr. Kit heartily embraced the practice into his classroom routines. As he told me, the mindfulness and well-being aspect emphasized during his interviews for Desert School were a large part of the vision that drew him to Desert School. He felt that these were critical values too often overlooked in schooling. For Mr. Kit, the daily mindfulness sessions were something that made us remarkable as a school. Part of his hopeful vision was that students would learn to be mindful, to act with care and concern in their everyday life, from their use of school supplies to their choice of cookies in the canteen.

As he explained it, “I try to use mindfulness in my teaching, to help get my students to think about wants versus needs… [as a way of] getting them to step back, to get them to think about what they need a bit more.” For Mr. Kit, mindfulness was a way to practice showing that we care for the world by making choices that demonstrated our understanding of our connection to others around us by not taking more than we need (cookies) and respecting the resources available for us to use (school supplies).

Within the curricular and pedagogical dimensions, our hopeful visions were realized as teachers planned and implemented curricula that demonstrated care and interconnectedness in innovative ways. Ms. Liz often expressed both ecological care and interconnectedness in the same breath. As described in Chapter Four, Ms. Liz came to me one day on the edge of tears, openly distraught over a proposal that would result in the use of ten trees worth of paper in early years alone. Grounding all of Ms. Liz’s work was a commitment to “making links” as she put it. In her hopeful vision for the school, all students would learn to see connections everywhere, from tiny bean sprouts poking through the earth to plastic bags floating through the air. When the “worksheet” proposal was made, Ms. Liz saw it as a direct impediment to her realizing her hopeful vision of students with an interconnected worldview. In many ways, her complementary curriculum was at risk of being impacted by the darker shadow curriculum which seemed to exhibit a particular penchant for unnecessary waste (Moroye, 2009; Uhrmacher et al., 2017). What she was lamenting for her four and five-year olds was the potential impact that being exposed to so much waste might do to their ability to see how they were connected to and dependent on trees. As we worked together to come up with an alternative plan, one that would allow her to demonstrate to her superiors how we could show care for the world through our curricular choices, I couldn't help but smile a bit on the inside. When I reflected on this experience through my own perspective, as part of my auto-criticism, I realized that this sadness and rage exhibited by Ms. Liz about paper waste and its possible implications for students' developing worldview was exactly the sort of reaction I *hoped* teachers at Desert School would have as we worked our way towards ecological integrity as individuals and a community. As disappointed as I was that the upper management had made such a decision, so disconnected from our mission as a school, I was also excited to find a teacher expressing such emotion and care for both the school mission as well as the world. Often in my experience at Desert School, I was frustrated by the lack of care or interconnectedness some of the teachers exhibited: buying and driving large cars, printing and laminating large amounts of materials, or even refusing to make time to take students outside. Ms. Liz, Mr. Kit, and Ms. Tanya's commitment to our collective hopeful visions through practices reflecting ecological integrity were uplifting and nourishing to me, reminding me I was not alone but part of a dynamic and blossoming community.

Working to understand teacher's visions, which Hammerness (2001) suggests are often overlooked in the field of education, may be a critical and missing link between achieving desired school reforms. Using the evaluative lens of ecological mindedness to better understand how hopeful visions are realized through classroom practice demonstrates that even teachers just beginning to find their way as ecological educators maintain hopeful visions of ecological care and interconnectedness. Even in the earliest stages they are ultimately beginning to cultivate ecological integrity through their work, and this is important to recognize for those of us striving to get all teachers designing and implementing curricula through ecoPBE approaches. What might be useful for the improvement of education (Eisner, 2002a) would be to incorporate opportunities in which ecologically minded teacher educators work with less experienced place-based teachers to identify teachers' hopeful visions for themselves, their students, and their world. With these visions in mind, teacher educators could work collaboratively with classroom teachers to identify expressions of and opportunities to cultivate ecological mindedness in action, even as they learn to find their footing on unfamiliar terrain.

Ecological mindedness and holistic learning. Once you've followed your visions and arrived in a new place, whether you intend to stay for a day or a lifetime, you start looking around for ways to make sense of your new surroundings. For some this may mean going out to make new friends and try new food. For others it may mean comparing your new surrounding to the place you just left. For many of us, it is some combination of the two. What we are seeking is integration and connection, a sense of wholeness and belonging in our new situation. As we found our footing at Desert School, the teacher-participants and I sought ways to make learning holistic and connective (Miller, 1992; Orr, 1992). This theme of holistic learning was apparent in every aspect of the school ecology as observed in teacher practice. I found this remarkable, especially because the teachers at Desert School had joined the school from much more traditionally minded schools. Nonetheless, they readily – if imperfectly – embraced the interdisciplinary nature of ecological place-based education (Anderson, 2017; Demarest, 2015; Sobel, 2005). At the same time, I sought new ways to help them make connections between their "old" way of teaching and their "new" environment, to smooth the transition from ecological disintegration to ecological mindedness. I described some of my attempts to help them make connections through the auto-criticism portions of this educational criticism, namely in the creation of the ecoliteracy framework and in my in-the-moment support and professional development as a collaborative and knowledgeable member of the ecological community.

Maxine Greene writes that imagination is the starting point of empathy (1995), and indeed I had to return to my early days as an ecological educator to reimagine what it was like the first time I brought a group of students outside for an investigation: how chaotic it was, how I much time I spent preparing a typical “ecological” activity, and how much I wished someone would hand me a place-based toolkit until I got the hang of things. I have written several times throughout the auto-criticism that my approach to ecoPBE has always been “start where you are” (Sobel, 2005). By this I mean becoming an ecological place-based educator means starting literally in the place in which you are teaching but also figuratively, from your own place of understanding within your worldview. Dewey’s concept of education and educative experiences is built around this same idea of starting from where we are. In order for an experience to be educative, which is to say productive and transformational for the learner, both continuity and interaction must be present in the lived situation (Rogers, 2014). Continuity refers to the ways in which a learner’s past experiences, present situation, and future growth are stitched together to “arouse in the learner an active quest for information and for production of new ideas” (Dewey in Rogers, 2014). Interaction refers to the manner in which a learner makes sense of what they experience, integrating it into their worldview. This can also be thought of as the point where “the internal aspects of who we are combine with the external" as a learner looks at an object or situation and test their observations against what they thought they knew previously (Rogers, 2014).

Early on in my time at Desert School, I became determined to create a comprehensive ecoliteracy framework that would help teachers find continuity and interaction within their experience of planning and implementing ecoPBE. In the auto-criticism, I describe the long and arduous, and at times isolating, work of creating, critiquing, and presenting this framework. Much like the arbor I built with Mr. Kit in Chapter Four, I envisioned that this structural framework would join together the straightforward English National Curriculum standards the teachers were so familiar with and the broad ranging set of knowledge, skills, and values we strived to share with students through ecoPBE. I knew that teachers would need such a structure to build upon, but I also wanted them to have the time to get comfortable with the ideas, concepts, and practices of ecological place-based education. As Anderson (2017) wrote of her experiences incorporating ecological place-based learning into the classroom, "At the Cottonwood School, it takes many of our teachers two or three years before they feel comfortable designing and leading place-based projects" (Kindle Loc. 2628). I knew from experience that this would likely be the reality for teachers at Desert School, and I tried my best to design tools that would support them as they built their own ecoPBE toolkit.

For me, this was a way of showing the teachers that I cared about and respected their experience, both past and present. I wanted to create a situation in which the teachers were able to start exactly where they were, no matter how daunting it seemed. This is what place-based educators do for their students (Anderson, 2017; Demarest, 2015); why wouldn't I do the same for my teachers who were also students of ecoPBE? Returning to Moroye and Ingman's (2013) framework of ecological mindedness, creating and sharing the ecoliteracy framework with the teachers was part of me trying to realize my intention to support holistic, connective learning experiences for the teachers as much as for the students by nurturing interconnectedness. When, during the initial training, I asked teachers to identify and elaborate on connections between their previous work and their current situation, my hope was that the experience of ecoPBE would be educative for the teachers, helping them to perceive a bit of wholeness, or ecological integrity, in their developing practice even as they tripped and stumbled across the dunescape.

As teachers learned to integrate the ecoliteracy framework into their teaching, I was often delighted at the many ways I saw the ecoPBE criteria brought to life through a caring and interconnected curriculum. Although the teachers in this study often hesitated to call themselves "ecological educators," they were without a doubt developing and practicing ecological mindedness in exciting ways. Ms. Tanya often used the ecoliteracy framework to guide her teaching on a regular basis. In one project, *How Animals Work*, she planned an entire field trip around the ecoliteracy strand of *Mindfulness and Empathy*, with a particular focus on the learning criteria "I take care of the environment and people around me." At the same time, the students were learning the more "typical" content of the English curriculum, including understanding how animal bodies work, although this was seen as no more important than simply connecting with other living beings with empathy and compassion. During a trip to Dog Friends (pseudonym), a local dog rescue center, Ms. Tanya not only encouraged her students to care for other living things, but she demonstrated her love of animals openly and expressively. Her students noticed, too, saying with awe, “You really are the dog whisperer.” Speaking with Ms. Tanya about how she integrated the ecoliteracy framework into her teaching, she told me it helped her to find connections for herself and her students on a daily basis. As described in Chapter Four, Ms. Tanya dedicated most of one wall to displaying the ecoliteracy criteria in her attempt to draw ecological concepts through everything. Using the framework helped her to created holistic learning opportunities for her students that integrated ecological care and connectedness little by little in a way that made sense to her as she learned to do ecoPBE. As she incorporated ecological place-based education into her ideas of teaching, both past and present, her perception of interconnectedness developed more fully, and I saw ecological integrity blossom within her practice (Moroye & Ingman, 2013).

It is important to consider what is of value in these situations that might help improve the practice of ecological place-based education. As I see it, a lot of energy and scholarship has gone into looking at the numerous shortcomings with regards to ecological education and the teacher experience. It is well documented that many teachers are not ecologically literate (Liu et al., 2015; Pe’er et al., 2007; Puk & Stibbards, 2012; Timur et al., 2013) and that teachers’ attitudes toward ecological and sustainability education are often limited by their individual self-efficacy and pedagogical content knowledge around this form of teaching (Esa, 2010). Currently in higher education, there is a lack of opportunities for pre-service teachers to gain experience with and knowledge of ecological approaches to teaching and learning because of numerous other demands for accountability, lack of time, and a false dichotomy set up between content knowledge and connection to place (Gruenewald, 2005; Gruenewald & Smith, 2008; Linnemanstons & Jordan, 2017; Sterling, 2001).

What I noticed in applying the framework of ecological mindedness (Moroye & Ingman, 2013) to the realization of holistic learning experiences within a new ecological school setting, is that it becomes possible see the blossoming of ecological integrity even among the prickly thorns that many see as limiting the advancement of ecoPBE. It becomes obvious that when we meet teachers where they are, and work from there, we find the idea of wholeness starting to emerge surely, if slowly. As Gruenewald and Smith write, “Although we may dream of a totally different approach to public education than the one that currently exists, it is necessary to work with, while trying to change, what we have” (2008, p. 350). Teacher educators must help teachers meet their intention of holistic learning by providing scaffolding and supports that encourage teachers to make sense of their new surroundings through curiosity and relationship, by finding ways to care about and connect with their new situation based on the places they have been and where they want to go.

Ecological mindedness and responsive action. Once you have arrived in a new place and found ways to connect to your new surroundings, there is still a lot of work to do. For those who are able to keep an open mind, and even those who are uncomfortable with uncertainty, most of this work will be done through trial and error and adaptation over time. Mr. Kit, Ms. Tanya, Ms. Liz, and I all expressed in one way or another our intention to move through the process of starting a new ecological school with receptivity and hard work. I came to think of this theme as *responsive action*, and it encompassed all the ways we expected to have to “get stuck in” as Ms. Tanya often put it and grow together, like a seed in a garden. Examining how this intention was realized across the Desert School curriculum through the lens of ecological mindedness gave me the opportunity to see all the ways responsive action led to a greater sense of ecological integrity within our school community.

The North American Association for Environmental Education outlines what excellence looks like in practice for an environmental educator. Along with the predictable expectation of understanding the history of environmental education, being able to discuss the aims of environmental education, and having familiarity with elements of curriculum planning, the guidelines outline the ways that environmental educators "foster learning and promote inclusivity" (NAAEE, 2019). According to guideline 5.3, excellence in environmental education means that "Educators know how to augment proper planning with the flexibility that allows them to take advantage of new instructional opportunities" (NAAEE, 2019, p. 27). This reflects a concept at the heart of place-based education, which is the need for educators, and therefore learning, to be responsive in their actions as they help students connect to the world around them. Being responsive is not an easy process, and it takes a lot of work (Demarest, 2015). Using ecoPBE approaches, teachers who may be accustomed to making a plan and then carrying it out step by step, suddenly find themselves replanning in the hours after a lesson or taking time out of their lunch break to organize a visit by an expert volunteer. Anderson shares the experiences of a place-based educator, who explained that taking on this new "connector" role "can seem like a leap into the unknown" (2017, p. 263). This educator also offered an alternative and optimistic take on becoming a place-based educator: "It can also lead to personal growth and a great deal of fulfilment as your program blossoms” and teachers become more comfortable in their new role (Anderson, 2017, p. 263).

Within the structural elements of their practice, the teacher participants let spaces in which they taught drive learning in an emergent way. Ms. Tanya used the backdrop of the ecodomes to inspire students’ adventure films. Ms. Liz created systems and structures in her classroom, such as the Proud Cloud and Magical Challenges, that supported open-ended learning and student ownership of the learning process. Mr. Kit presented students with weekly imaginative writing prompts that could be interpreted by the learner while still addressing the standards-based skills Mr. Kit needed to reinforce. Responsive action, as demonstrated through classroom structures, created space for continuity and interaction to permeate the situation. Through the lens of ecological mindedness, this sort of responsive action is about demonstrating care by way of paying attention to the specific needs of your students and making space for them to interact with a lesson or project in a way that fosters greater meaning for them, even if that is different from the way it was originally planned.

Within the curricular and pedagogical dimensions, ecological mindedness might mean doing the hard work of finding ways to deepen the interconnectedness of classroom learning to students’ unique curiosities, strengths and worldviews, even if it means taking a different path than originally planned. This path is often bumpier, hillier, and longer. Linnemanstons and Jordan (2017) studied how teachers responded to and integrated place-based professional development into their classroom practices. Even at an environmentally focused school, teachers admitted that sometimes it was just easier and faster to skip the place-based approach because “[w]e all feel very pressured to cram in standards. It’s so much faster to give examples and show videos than take the time to find them in the environment around us” (no page number). From the beginning, I did my best to explain to teachers that ecological place-based education was slower and more complex than traditional approaches to school. I reiterated this to the board as well in my attempt to create space and time for the teachers to learn how to best respond to student interests and needs through the ecological curriculum.

The teachers at Desert School worked deliberately to integrate responsive action into their practice in ways that embodied ecological integrity, care, and interconnectedness. Ms. Liz demonstrated responsive action in her teaching the day she looked outside her window, saw the wind blowing, and whisked her students outside to dance like leaves. She wasn’t afraid to disrupt her scheduled program to create an opportunity that would help her students connect with the local landscape in the “here and now” more than her original lesson would have. The dancing leaf lesson, though it was unplanned and spontaneous, was an expression of Ms. Liz’s ecological integrity as her students and she practiced seeing the world through the perspective of trees and leaves blowing around on a windy day. At the same time, it was a demonstration of Ms. Liz’s growing ecological mindedness through responsive action. As she explained, “I loved the activity Sue did this weekend [at the workshop], and when I realized it was so windy outside today, I thought it would be fun to take the students out and try it out. They needed a chance to move their bodies, and this seemed like the perfect opportunity. They loved it, and so did I.”

Ms. Tanya expressed similar ecological mindedness and enthusiasm for ecological place-based education as she reflected on the experience of bringing in a real, live arctic explorer to digitally speak with her students:

> The buzz that they got from him, and the questions that they came up with, even during our chat with him. Because, you know, you can tell them about explorers…but they still had a very Indiana Jones feel about them in their head. Then they spoke to Eric, and he made it real…It's different to talk to someone than to just read about it…This experience made me realize that we need to bring in more specialists. The effort – it is so worth it.

The effort of planning for this unique opportunity meant extra work for Ms. Tanya, not to mention dealing with the trouble of technology and skillfully navigating the unpredictability of students in front of a visitor. She could have turned down the opportunity when I was finally able to connect with Eric, telling me her schedule was too tight or that she hadn't planned for a day dedicated to an impromptu visitor. Other teachers at Desert School had given me similar reasons *not* to be responsive when interesting ecoPBE opportunities arose. Ms. Tanya stayed openminded and was willing to put in the time that these sorts of organic processes require. Through her practice, she was able to support students in making connections between their learning to the world beyond their classroom door, to meet someone who spends his time caring for the environment and giving them a new perspective of why people explore in real life. As she described it, the experience, despite or perhaps because of the effort, was all the richer, both for her and her students. This experience showed how, when we look at a situation through the lens of ecological mindedness, the responsive action of ecological place-based educators can be seen as an expression of ecological integrity, care, and interconnectedness.

Towards art and experimentation in ecological place-based education. The Desert School teachers and I set off on this adventure with hopeful visions, striving for holistic learning, and aiming to be responsive in our actions during this slow and winding journey. Dynamic and transformative ecoPBE is predicated on making instinctive decisions, being hopeful and making connections in order to "take advantage of [these] new instructional opportunities" (NAAEE, 2019, p. 27; Orr, 1992). Too often, place-based educators find themselves pushing up against the standards and structures of schooling in their attempts at innovation, imagination, and creativity. Gruenewald captures this well in his examination of "experimentation" in education. He writes, "What I question is the impact of a culture of professionalization, the impact of standardized routines and rituals, and the impact of the deafening drumbeat of accountability on the experimental mindset…I want to keep open and allow…questioning and experimentation" (2002, p. 532). Those of us seeking to improve ecological education as an enterprise, which is in fact one of my aims as an educational critic and connoisseur (Eisner, 2017), can look to the experiences of educators such as those at Desert School, learning to do ecoPBE to the best of our ability in the place we inhabit.

Those of us seeking to bring ecoPBE more fully into the enterprise of education need to look at the situations and circumstances that support educators in creating unique opportunities that bring "the experience of both the students and the teachers [back to] a prominent spot in the curriculum so that curriculum can be seen as a human endeavor through which content is explored and mastered" (McConnell Moroye & Uhrmacher, 2018). Administrators and teacher educators must consider how we can make space for this sort of experimentation within the school ecology. When there are so many things that remain “untried and untested” (Gruenewald, 2002, p. 532), it’s a wonder to consider what possibilities might arise if we clear a plot for change, for growing towards ecological mindedness with care, connection, and integrity. This sort of space would allow us room to respond to the educators who “[s]adly…will bristle at the suggestion that teachers be encouraged to approach their craft with an original mind. I cannot think of better evidence to support the claim that the art of teaching is suffering from a climate of prescription” (Gruenewald, 2002, p. 531). In the next section, I unpack the idea that ecological place-based education is a creative or artistic act performed by the teacher, while expanding on the ideas of artistry and creativity within ecological education. This is my way of making space, pushing back against climate of prescription and creating change.

Research Question 3

> Q3 What aesthetic judgements and creative attitudes do teachers and the researcher express as they adapt to a new school and ecological, place-based curriculum?

Artistry, Eisner tells us, is the act of making judgements in the absence of rules (2002b). The situation of starting a new ecological place-based school is one in which there is a definite lack of rules, a sense of making it up as you go. Part of this may simply be the nature of starting new schools in general. However, schools that strive to implement innovative or even marginalized approaches, such as ecological or sustainability education, have a particularly ambiguous and emergent nature to them (Tubin, 2009), thanks in part to the complexity inherent in concepts like ecological, place-based, and sustainability education (Hodgkinson, 2013; Sterling, 2001).

Interestingly, within the field of ecoPBE there is an overarching assumption that artistry and creativity are an inherent part of doing this certain type of education. There is the allusion to choosing from a "palette of possibilities" (Demarest, 2015) and many references to teachers becoming designers and creators within the pedagogy of place-based education (Gruenewald, 2002; Smith, 2002a, 2002b). The purpose of my third research question was to unpack this underlying belief of artistry within ecoPBE, to examine it against the lived experiences of teachers learning to do ecoPBE, and to try to answer the question of what artistic judgements and creative attitudes are expressed in the process of bringing a new school to life.

Eisner describes educational artistry as teaching that is aesthetic, responsive, creative or inventive, and emergent (2002a, p. 154). Artistry in teaching is as much about beauty and grace as it is about playfulness and staying open to possibility. Art, he writes, "is the process in which skills are employed to discover ends through action" (2002a, p. 155). At the same time, Eisner emphasizes the balance between the application of knowledge and intuition, what Eisner describes as the "tension between automaticity and inventiveness" (2002a, p. 155). In highlighting automaticity, he is emphasizing the work of teachers who are experienced and knowledgeable, with a full and diverse bag of tricks to draw on in any given moment. Inventiveness, he suggests, is their ability to intentionally leave room for unpredictability and spontaneity to arise within their practice because of these tricks and routines that making teaching so much easier. Automaticity and experience make room for invention to occur. Rubin (1983) describes teaching artistry in the following way: "Artistry involves attitudes, intentions, knowledge, and discernment, blended into an integral force. Teaching artistry involves choice of educational aims of high worth, use of ingenious ways to achieve these aims, and pursuit of their achievement with great skill and dexterity” (p.8). Combining the ideas of Eisner and Rubin, educational artistry might be thought of as beautifully and artfully applying one’s skills, knowledge, and personal disposition to the act of teaching, even – or perhaps especially – when the ends are unknown. Still, there is a lot that is left undefined and open to interpretation related to teaching artistry: How does it happen? Where does it happen? Who is the teacher? What is their background? What are their intentions and aims? While often artistry is often regarded as a given by those who teach, there is much left to be explored within this expansive area of education (Eisner, 2002a).

Creativity is equally as tricky to define because of its inherently complex location between an individual and society; creativity lies at the intersection of “a person’s thoughts and a sociocultural context” (Csikszentmihalyi, 2013, p. 23). In education in particular, creativity scholars purport that there is not one single definition of creativity (Harris, 2014, 2016; Harris & deBruin, 2018). I found the ideas of Kaufman and Gregoire (2015) and Csikszentmihalyi (2013) both useful and accessible in making sense of creativity within educational practices because their work integrates many of the earliest theory, concepts, and ideas of creativity into contemporary frameworks using familiar and diverse examples. Kaufman and Gregoire (2015) offer a summary of the attitudes and partialities of creative people, writing, “The common strands that seemed to transcend all creative fields was an openness to one’s inner life, a preference for complexity and ambiguity, an unusually high tolerance for disorder and disarray, the ability to extract order from chaos, independence, unconventionality, and a willingness to take risks” (p. xxiii). They offer a list of ten things that highly creative people do differently including imagination, passion, daydreaming, solitude, intuition, openness, mindfulness, sensitivity, turning adversity into advantage, and thinking differently. I will draw more on these practices throughout this section.

Csikszentmihalyi, who has done ground breaking work in modernizing the field of creativity studies (2013), defines creativity specifically as the process of creating something new that is also valuable to a particular domain or field and a creative person in particular as “someone whose thoughts or actions change a domain or establish a new domain” (p. 28). Csikszentmihalyi also is adamant that complexity of personality and character is one thing – perhaps the only thing – that all creative people have in common in a field difficult to succinctly delineate, and each case must be taken as particular. That said he does offer “ten pairs of antithetical traits that are often both present in such individuals and integrated with each other in a dialectical tension,” including such combinations as being both energetic and restful, smart and naïve, playful and responsible (2013, beginning on p. 55). These antithetic traits helped me to refine and illuminate my analysis and evaluation of the themes of artistry and creativity found in this study.

And so, to return to my third research question: *What aesthetic judgements and creative attitudes do teachers and the researcher express as they adapt to a new school and ecological, place-based curriculum?* In answering this question, I returned to the initial assumption of artistry and creativity within ecological place-based education, and asked myself a simpler question: Is artistry inherent in ecological place-based education no matter who does it? Do new ecoPBE teachers express creative attitudes and use artistic judgements?

In the existing literature, scholars have focused almost entirely on experienced place-based educators who have developed their repertoire with time and ample opportunities to deepen their knowledge of ecological theory and sustainability science. They have somehow found or created the space in which they are comfortable enough to sway and shimmy with grace and flair. But what of applying the same question to the inexperienced newbie to the practice of ecological place-based education? Having spent the last year watching teachers inexperienced with this approach to teaching and learning try it on for size, I have to answer in the affirmative, that artistry and creativity are inherent in the act of place-based education, even in the work of inexperienced and developing educators of this sort. In particular, in examining the ways in which teachers realized their intentions of hopeful visions, holistic learning, and responsive action, I found three complementary themes emerges when their practice was viewed through the lens of ecological aesthetics: *imaginative diligence, open-hearted connections, and deliberate spontaneity*.

Just like the intentional themes were grounded in the underlying ideas of ecological integrity and ecological mindedness, I believe that the expression of artistry and creativity observed in this study is intimately tied to the particular community ecology found within Desert School. With regards to ecological place-based education, this community ecology was heavily shaped by my own particular connotations of artistry in education and ecological education. What I mean to say is that, from day one with the teachers, I explained to them that I believe teaching is an art, and that I saw each of them as artists. I gave them permission and explicitly encouraged them to take risks, make things up, let ends emerge, and otherwise “put their signature on it” (Eisner as cited in Della, 1997, p. 27) as they learned to “do” ecological place-based education. How did this influence the way they approached ecoPBE? What sort of culture did it create in the school? In what way did this shape the artistry that emerged? I can’t say for sure – and perhaps this might be the topic of future research around ecoPBE and mentorship – but I bring it up here to point out that I was not an impartial observer, but rather an interdependent *and* influential member of the Desert School community. It is impossible to separate my belief that there is artistry in teaching from the fact that I observed artistry within the practice of new ecological place-based education. This might be viewed as a bias within this study, even though other scholars, such as Eisner, Rubin, Greene, Gruenewald, and of course Dewey, have built theoretical frameworks on the concept of artistry in education. I do not say this to disregard this potential limitation, but to suggest that artistry in education is a concept ripe for exploration, especially in a world ever more lacking in rules. What follows is an elaboration and evaluation on the themes that emerged when I looked at the artistic judgements and creative attitudes of the teachers and myself as we adapted to a new school and ecological, place-based curriculum.

The implication of these themes can be interpreted in many ways, but I am particularly interested in the way that the themes mirror the ecological processes that sustain dynamic and resilient communities, illuminate the complexity of ecological place-based education, and widen the openings created when we recognize and nurture ecological artistry within ecological place-based education.

Expressions of Ecological Artistry and Creativity

As noted above, the themes that emerged were first and foremost ideas that grew from within the community ecology of Desert School. As I sorted through the data and worked on making sense of it all, I came to think of these ideas as the expressions of the community ecological artistry of Desert School, or simply put: the ecological artistry. In this study, I have defined ecological artistry, most succinctly, as the creative attitudes and artistic judgements that arise from the dynamic interaction of people and places coming together to create something new and beautiful. Creative attitudes might be thought of as the things that are said, done, or otherwise expressed; artistic judgements can be thought of as the particular discernments and sensitivities applied by the ecological artist that guide them as they attempt to create that new and beautiful thing. The themes that arose from within the ecological artistry are *imaginative diligence, open-hearted connection, and deliberate spontaneity*.

These themes are intentionally juxtaposed ideas, echoing Csikszentmihalyi (2013) idea of antithetical themes, which I use to capture the complexity of both ecological artistry in general and the expression of artistic judgements and creative attitudes of ecological place-based teachers in particular. As Csikszentmihalyi (2013) writes, “If I had to express in one word what makes [creative peoples’] personalities different from others, it would be *complexity…*they contain contradictory extremes…and the ability to move from one extreme to the other as occasion requires” (p. 56-57). In these three complex binaries –*imaginative diligence, open-hearted connection, and deliberate spontaneity* – I attempt to capture the essence of the qualities of expression of artistry and creativity in ecological place-based education in an attempt to offer a concise and yet expansive anticipatory framework for examining and evaluating artistry in ecological place-based education (Eisner, 2002a). In the remainder of this section I will define what

I mean by each of these themes, where they are present within this study, and what value they have within the landscape of ecological education.

Imaginative diligence. As described in the previous section, the teachers in this study expected to have to work hard, to put in the time, to "get stuck in" and be responsive in their roles as founding teachers at an ecological place-based school. They recognized the ambiguous nature of the project, and they were up to the challenge. Not only that, but in working to realize their intentions, in particular their hopeful visions, they demonstrated imagination, creativity, and inventiveness, and endurance over and over again. In ecological theory, imaginative diligence might be thought of as a reflection of the cycling of matter and the flow of energy that moves through and across systems. In ecological systems, as well as in ecoPBE, there is this constant interplay between gathering and dispersing, resting and being active, imagining and creating, dreaming and doing. I came to think of this as *imaginative diligence*, intentionally linking together creativity and hard work, the actions displayed by Mr. Kit, Ms. Tanya, Ms. Liz, and myself as we brought the new ecological school to life.

Niehoff explains that working towards creativity in school is difficult because "as foundational as we collectively view creativity to be, it is also elusive in terms of common understanding" (2018, p. 1). We need examples of what creativity looks like in action so that we might be better able to perceive it in practice. So, what does *imaginative diligence* look like? The findings of this study offer several examples. Mr. Kit expressed imaginative diligence in the numerous times he spent his weekends shopping for materials and resources for a project or visiting obscure locations in order to plan a unique and wholly integrated field trip. He was untiring in his commitment to creating the best educational experiences for his students, even while joking about looking forward to getting his weekends back after a few years of tweaking projects. Ms. Tanya imagined and implemented projects that incorporated ecological concepts into as many aspects as she could from her ever expanding understanding of ecoPBE while at the same time diligently drawing in the National Curriculum Standards. She explained to me that she found herself taking interest in articles about environmental and sustainability topics in a way she hadn't before her time at Desert School. This extra effort spent researching and learning showed up in her teaching. The more she got "stuck in," the more she was able to contribute to advancing the hopeful vision of creating a remarkably different ecological school. In the final weeks of the school year, she and I led teachers in a review of the entire Desert School curriculum in order to address gaps in our coverage of *both* the ENC and the ecoliteracy framework, with Ms. Tanya leading the charge to help teachers reimagine ways to teach for ecoliteracy. Ms. Liz was unwilling to let go of her ecological integrity with regards to resource consumption and teaching and learning. Instead of simply "going with the flow," she pushed back against authority and questioned the impact using so much paper would have on student's ecological literacy as well as the school's ecological integrity as an "eco school." She then took the time to imagine alternatives, present them to her peers, and try them out in her own time.

In all of these examples, hopeful visions were the driver behind the artistry in practice, providing a reason to stay engaged and to push on even when exhaustion inevitably set in. Why is this important? Creative people will explain that caring about a project "having affect in a project," is imperative to making it through the long phase of moving from inspiration to creation (Csikszentmihalyi, 2013, p. 105). As the historian

Natalie Davis put it, “It is hard to be creative if you are just doing something doggedly” (in Csikszentmihalyi, 2013, p. 105). Similarly, Ms. Tanya explained that putting in the work, such as organizing a unique experience with an arctic explorer, was worth it if it improved the experience for students. Mr. Kit saw the hard work he put in to designing rich and interdisciplinary projects as the necessary part of “creating something from nothing.” For Ms. Tanya and Mr. Kit diligent effort that goes into the processes of “test and retest, write and rewrite, design and redesign” required when doing ecological place-based education “is sustained by the image of what might be” (Hughes, 1961, p. 91). In other words, the teachers were driven by what they imagined was possible. Imaginative diligence makes change possible. In realizing the big hopeful vision of ecological place-based education for a more beautiful and sustainable world, it is important to maintain a sense of playfulness and curiosity alongside committed and purposeful action, to be both imaginative and diligent.

Open-Hearted connection. I also observed the expression of creative attitudes and artistic judgements through a quality I have called *open-hearted connection*. I define open-hearted connection in ecoPBE as a way of approaching educational situations with openness and a big heart while also seeking opportunities for relationship and collaboration, among people, things, and ideas. There is a lightness to this expression of artistry and creativity, a liveliness that allows any experience to unfold authentically. Open-hearted expression echoes the ecological concepts of nested communities and interdependent relationships.

I first came to this idea of open-hearted connection as an expression of artistry when I looked at the ways the Desert School teachers went about realizing their intention to create holistic learning in their classrooms and for the school as a whole. Open-hearted connection, as an expression of artistry and creativity, meant not necessarily having the answer but being willing to respond with curiosity and compassion in the moment. For the teachers in the planning phase of curriculum development, it was also about making space for the authentic opportunities that help cultivate connection with the world and people around us. Eisner writes of the teacher-artist, “The teacher must ‘read’ the emerging qualities and respond with qualities appropriate to the ends sought or the direction he or she wishes the students to take” (2002a, p. 155). Csikszentmihalyi (2013) offers an interesting take on the interplay of openness, connection, and creative expression. He writes, “Without a good dose of curiosity, wonder, and interest in what thing are like and in how they work, it is difficult to recognize an interesting problem. Openness to experience, a fluid attention that constantly processes events in the environment, is a great advantage for recognizing potential novelty” (p. 53). When teaching is imbued with a sense of wonder and delight, it is an expression of artistry in the form of open-hearted connection.

Mr. Kit demonstrated open-hearted connection when he crafted an entire lesson around one student’s interest in philosophy but in such a way as to encourage *every* student to consider how their actions impact others’ happiness and well-being. Open-hearted connection was also present in his practice when, at the end of a busy day in the mountains, he sat down and read bedtime stories to the boys in his class. In this quiet and authentic moment, Ms. Kit saw an opportunity to deepen his relationships with his students through an experience not typically offered by the daily classroom experience. Ms. Tanya expressed open-hearted connection when the *Adventurers and Explorers* scavenger hunt, so carefully planned and set-up in the early hours before school, was unintentionally bungled by the gardening staff. Instead of being upset or seeing the situation as a disaster, she responded with laughter and kindness to this “interesting problem” (Csikszentmihalyi, 2013, p. 53), helping students make the connection between our gardener’s sense of care for the community and the fact that their scavenger hunt had become “a real adventure.” Ms. Liz’s approach to teaching was an ode to open-hearted connection, and she emphasized often that her practice of ecological place-based education was steeped in a strong desire to help students make connections and demonstrate care. Displayed around her room were various pieces of student work, with careful captions describing student’s ideas. The Proud Cloud allowed students the opportunity to show off the work they were most excited by. In turning over the production of Jack and the Beanstalk to her four- and five-year olds, Ms. Liz created a unique opportunity to show students she trusted them to create a high-quality product that was authentically their own.

As seen in these examples, open-hearted connection is predicated upon curiosity and mutualistic relationships, attentiveness to the needs of others and also a willingness to authentically share a bit of oneself through teaching practices. Eisner emphasizes the importance of the “integration of feeling and thinking” as a component of artistry in teaching, especially in situations lacking clear formulas or algorithms, like the starting of a new school or a new way of teaching (2002b, p. 6). Hughes explains that “of the several qualities…of creativity in teaching, none seems more fundamental than maintaining the integrity in the relationships of the human beings involved in the educational enterprise (Hughes, 1961, p. 80). Open-hearted connection recognizes emotionality and relationship as a critical expression of artistry in teaching. Emotionality and relationship are critical components of the most holistic form of ecoPBE that integrates the "intellect, hands, and heart" (Orr, 1992, p. 137). Ecological place-based education is, according to many, rooted in a sense of wonder, and "the sense of wonder is rooted in the emotions, what E.O. Wilson has called 'biophilia,' which is simply the affinity for the living world…even a thorough knowledge of the facts of life and of the threats to it will not save us in the absence of the feelings of kinship with life of the sort that cannot entirely be put into words" (Orr, 1992, p. 87). Open-hearted connection is my attempt to put words to the expression of artistry found in ecological place-based education.

Deliberate spontaneity. The expression of creativity and artistry that was perhaps most exciting for me to observe as a connoisseur of ecological artistry was that of *deliberate spontaneity* in the teachers' practice of ecoPBE. To me, the idea of deliberate spontaneity encapsulates the emergent and aesthetic qualities of artistry in teaching described by Eisner. He writes, "Teaching is an art in that the ends it achieves are often created in process…the ends achieved are emergent…found in the course of interaction with students rather than preconceived and efficiently attained" (Eisner, 2002a, p. 155). Not only that, but the act of teaching is "performed with such skill and grace that, for the student *and for the teacher,* the experience can be justifiably characterized as aesthetic (Eisner, 2002a, p. 154, emphasis added). According to Dewey, an experience is aesthetic when there is a sense of unity and completeness to the experience. Unity can be thought of as the wholeness or integrity of the experience. "Every successive part flows freely, without unfilled blanks, into what ensues. At the same time there is no sacrifice of the self-identity of the parts," writes Dewey in describing an aesthetic experience (1934, p. 38). Completeness is the way in which an aesthetic experience "runs its course to fulfillment" and, as a result, is set apart as unique and transformative (Dewey, 1934, p. 36). Of course, in this study, I was most interested in the experience of the teacher, how they express creativity and artistry as they learn to do ecoPBE. Deliberate spontaneity describes the expression of artistry I observed at Desert School when teaching was thoughtfully enacted with ends in mind and yet allowed to run its course freely and completely through the skill and grace of the teacher. In a complementary sense, deliberate spontaneity was an expression of artistry required to realize the intention of allowing for responsive action to guide our practice of ecoPBE.

One of my favorite examples of deliberate spontaneity observed within this study was that of Ms. Tanya's experience planning and then implementing for students to take pictures in the garden. As I wrote in Chapter Four, I believe this experience embodies the richness and complexity of ecological artistry in action, especially with regards to deliberate spontaneity. Ms. Tanya, having to accommodate for an unexpected change in her schedule, knew she wanted students to get excited and curious about the plants around campus as they headed into a new project. She had a particular end in mind, and yet she allowed herself to simply explore and follow her instinct in planning and implementing the activity. As a teacher who prided herself on her organization, this was a step outside of her personal playbook, and yet the end result was initiated with such skill and grace, that the aesthetic could be experienced even by me in listening to the retelling. As she put it, this experience was *the* moment for her, the instance in which she realized "what we are supposed to be doing here" in creating a radically different school. Through thoughtful improvisation, Ms. Tanya created for herself and her students an ecological experience that was truly transformative. Similarly, Ms. Liz incorporated deliberate spontaneity into her practice when she invited students outside to dance like leaves in the wind. She saw an opportunity and chose to change her plans, to literally and figuratively follow the wind. Mr. Kit often planned for deliberate spontaneity in his ecological project-planning, leaving room for decisions to be made through "interaction with students" instead of simply carried out according to a prefigured plan (Eisner, 2002a, p. 155). Ms. Tanya, Ms. Liz, and Mr. Kit embraced the opportunity to try new things and leave room for ends to emerge. Deliberate spontaneity shaped their practice as they adapted to their new roles in their new school with creativity and artistry. Teachers who demonstrate deliberate spontaneity in their practice, in the form of playfulness mixed planning, experimentation mixed with intention, send the message to their students that this sort of creativity and artistry is welcome in their classroom. Harris and deBruin, two scholars dedicated to examining creativity in education, explain that in reviews of the literature "creative attitudes modeled by teachers influenced students' own attitudes to creativity (deBruin, 2016)…From the 200 studies reviewed in Davies et al. (2013), teachers—as creative practitioners took risks in developing creativities in students, and encouraged similar behaviors in students" (2018, p. 217). The actions of the teacher matter when it comes to encouraging creativity and artistry in the classroom if we want work towards solving the world's problems with greater imagination and courage. Deliberate spontaneity in a teacher's practice may inspire thoughtful risk-taking and bold inquisitiveness on the part of the student, for a more beautiful and healthier world.

Valuing Artistry in Ecological Place-Based Education

What value is there in acknowledging that artistry is apparent in ecological place-based education? What can we learn by identifying and evaluating the themes of imaginative diligence, open-hearted connection, and deliberate spontaneity as an expression of ecological artistry? How do these findings improve ecological place-based education? How can we support creativity in schools, and why would we want to? In other words: “What does it all add up to?” (Eisner, 2002a, p. 233). What we value depends on what we are looking for and what lenses we are looking through. As an artist and environmental scientist, I was most interested in the ways that teachers’ expression of artistry complemented their work as developing ecological educators, and what their experiences might offer for the improvement of ecological place-based education.

First, I believe it is important to note that the expression of artistry and creativity within ecoPBE is not fancy. It is not out of reach or something that is only accessible to the most experienced and elite of ecological place-based educators (Azzam, 2009; Csikszentmihalyi, 2013; Niehoff, 2018). The teachers in this study had minimal training in ecoPBE, except in the form of a single six-hour workshop and in-the-moment support throughout the year, and yet their practice was full of examples of the art of teaching. I went into this study unsure of what I would find, and I was excited to see the beauty that emerged within the practice of teachers just learning to do ecological place-based education. This is important because teachers who act creatively inspire creativity in their students (Eisner, 2002a; Gallup, 2019; Harris & deBruin, 2018; Miel, 1961). Within ecological education, creativity is needed now more than ever to help us reimagine ways of being in and interacting with a world that is changing dramatically year by year.

By recognizing the artistry that emerges inherently in the practices of inexperienced ecological educators, we begin to get a sense of the possibility that actively cultivating creativity could have on the field of ecological place-based education. By recognizing creativity as a “vital aspect” of meaningful and worthwhile teaching, we start to clear an area where the seeds of innovation can be planted, and new growth can occur in this space. Eisner explains that in order for creative teaching to occur “such a disposition much be cultivated, teachers themselves need to feel free to innovate, to explore, to play” (2002a, p. 162). Similarly, Niehoff suggests that creativity “is a process that we all have the capacity for, but all have to invest in as well” (2018, p. 2). Recognizing the expression of *imaginative diligence, open-hearted connection, and deliberate spontaneity* in the practices of new ecological place-based educators is important because it provides the field with a simple yet expansive anticipatory framework to examine and evaluate the practices of new and even experienced place-based educators. These themes may also be useful to guide the development of educational programs that nurture ecological artistry in all educators. I am particularly interested in the way that the themes echo the ecological processes that sustain dynamic and resilient communities, demonstrate the inherent complexity of ecological place-based education, and accentuate the potential that nurturing ecological artistry could have for the improvement of ecological place-based education.

The themes of *imaginative diligence*, *open-hearted connection, and deliberate spontaneity* were at first difficult to name, and I struggled to condense long lists of words, phrases, and ideas drawn from the data into useful themes. I juggled with the myriad ways the teachers expressed ecological artistry, as I observed it through my ecological aesthetic lens, and the need to distill the bigger lessons learned from the findings (Eisner, 2002a). It was important for me to turn away from the artistic frame of reference and towards the ecological and back again, time and again. In doing so, I started to see parallels in the themes I was identifying and ecological concepts.

What was originally a list of phrases like “get stuck in, put in the work, courage + chaos, ingenuity + resilience, commitment, and something from nothing” drawn from the data, I was able to connect to the ecological idea of cycles and flows, matter and energy. I looked at the list of phrases and ideas, and, with time, came to the term *imaginative diligence* as a representation of the creative energy of imagination and the difficult work of the matter of teacher. Similarly, I came to realize that *open-hearted connection*, the condensation of ideas like “courage, connection, emotionality, mindfulness, and care, and symbiosis,” was an echo of the idea of nested systems and interdependent relationships. *Deliberate spontaneity*, the representative theme for ideas such as “experimentation, the organic part, pause to consider, growth, a learning journey, continuous learning, and work in progress,” echoed the ecological concepts of growth and development and change over time.

I want to point out that this wasn’t a one-way process; I flipped between art and science, between intuition and intellect in order to recognize and understand the themes as they emerged. Neither was this a simple conception of art versus ecology, creativity versus logic. These ideas were not opposite or at separate ends of the spectrum, but rather I employed them as complementary and reciprocal viewpoints. Just as learning to do ecological place-based education is a complex task of moving between disciplines, determining the best descriptive binary was a difficult task. I refined the themes by asking myself, for example, in what ways was deliberate spontaneity most similar to the concept of change over time (answer: evolution can occur because of random disruptions to a system, or slowly and steadily over time), and it what ways was it different or inappropriately matched (answer: it is hard to say, scientifically, that nature is "spontaneous"; life does not spontaneously arise from non-life or change without warning for example; it does, however, react to its environment and benefit from random mutations and sexual selection!). This helped me to better understand if my themes – and particularly the word pairings – could be useful, and how. The three themes of *imaginative diligence, open-hearted connection, and deliberate spontaneity* hopefully both exemplify the complexity of ecoPBE while offering ideas that are robust enough to build upon for the improvement of ecological place-based education.

Seeing the tripartite links between education, ecology, and artistry through these three themes feels useful to me in shedding new light on the assumption that ecological place-based education is inherently artistic or creative (Demarest, 2015; Smith, 2002a, 2002b). Is it possible that this assumption of artistry in ecoPBE has always been an honest, but perhaps unconscious, recognition of the artistry and creativity found within ecological systems, and the ecological ideas found within artistic and creative practices? If this is the case, and we choose to use this anticipatory framework to guide the improvement of ecoPBE, then these three themes may present a new perspective on the ecological education concept that "nature is our greatest teacher" (Stone & Barlow, 2005) and the notion that starting where you are is the only place to start (Sobel, 2005). The themes of *imaginative diligence, open-hearted connection, and deliberate spontaneity* give educators across many disciplines, but especially the arts and sciences, a common starting point for developing hopeful, holistic, and responsive curricula and nurturing instructional practices that address our current ecological crises with not only intellectual understanding but also compassion and creativity.

The connection of these three themes to the ideas of ecological integrity and ecological artistry may provide an opening for teachers unfamiliar with ecological concepts and environmental studies to approach these topics with curiosity and an open mind. Instead of saying to untrained educators, “You must understand what change over time means in ecological systems and be able to demonstrate it through examples!” (my oversimplification of the overarching attitude of many evaluative frameworks meant to measure environmental and ecological literacy), teachers might be encouraged to consider how they deal with growth and obstacles in their practice, how they have learned from their environment and developed over the years, how they are creative in their teaching. In this way, the teacher is supported in recognizing and appreciating their own artistry, which can, with the help of a knowledgeable and imaginative ecoPBE mentor, be translated into supporting understanding of ecological ideas through and while enhancing creative educational practice.

From Art to Magic in Ecological Place-Based Education

This section discussed the themes of artistry and creativity that emerged in the practices of the teachers at Desert School. In the following section I will turn towards further evaluation of my own expressions of ecological artistry as seen through the methodology of auto-criticism and the narrative structure of magical realism utilized in this educational criticism.

Research Question 4

> Q4 What is the import of using magical realism within educational criticism and connoisseurship?

The other day I walked through a neighborhood that was not mine, in a city I do not recognize as my own. As I walked the sound of wild geese calling overhead caused me to think of Mary Oliver's poem of the same name and in doing so infused the moment with a sense of significance. She writes (Oliver, 1986):

You do not have to be good.
You do not have to walk on your knees
for a hundred miles through the desert repenting.
You only have to let the soft animal of your body
love what it loves.
Tell me about despair, yours, and I will tell you mine.
Meanwhile the world goes on.
Meanwhile the sun and the clear pebbles of rain
are moving across the landscapes,
over the prairies and the deep trees,
the mountains and the rivers.
Meanwhile the wild geese, high in the clean blue air,
are heading home again.
Whoever you are, no matter how lonely,
the world offers itself to your imagination,
calls to you like the wild geese, harsh and exciting –
over and over announcing your place
in the family of things.

I share *Wild Geese* here in full because, as strange as it may seem, in that moment of looking up and listening I realized that a spirit of this poem is echoed within my own dissertation, and particularly through the use of magical realism throughout the auto-criticism portion of a larger educational criticism. By telling my story through this narrative method, I was attempting to tell about my despair in a way that allowed me to find my place again in the educational family of things. When I stopped to listen, the world offered itself to my imagination and helped guide me home, like the wild geese. In this section I address my fourth question: *What is the import of using magical realism within the methodology of educational criticism and connoisseurship?* I discuss what I learned through this process and this narrative approach (Barone, 2007) within this particular methodology. I also explore the value of magical realism in educational research dealing with ecological education.

Why Magical Realism

My decision to use magical realism as a narrative construction for this educational criticism was very much connected to my own expression of artistry, as an educational researcher, environmental scientist, and ecological educator in particular. Just like the teachers displayed deliberate spontaneity in their decision making, I relied heavily on my intuition in setting off on this dissertation journey. Partly this is because *deliberate spontaneity* is part of who I am. In teaching and in life, I tend to make elaborate plans, outlining every possible step along the way, then ultimately play it by ear when the actual trip comes. In a sense, this ability to create beauty from chaos and extract meaning from mud is part of my personal connoisseurship. As I have described elsewhere, ecological artistry, to me, is what is created and expressed from the dynamic interaction of people and places coming together to create something new and beautiful. Tt was as much at play within my practices at Desert School as it was within the formulation of this dissertation.

I also “chose” to use magical realism was because I didn’t know how else to do it, although “chose” is perhaps not the correct word. Ellis (2004) describes how she felt in many ways that autoethnography chose her, presented itself to her as a method that would allow her to tell the stories that needed to be told. Similarly, I often feel that magical realism chose me as much as I chose it; there was an intuitive – and yes, deliberately spontaneous – nature to this decision. As I have described in other sections, when my job, which I loved, was terminated without warning or reason, I was left stunned, devastated, and ultimately grieving. Because my research was tied directly to my job, extracting meaning from the data seemed impossible until one day I was struck by the idea to write my portion of the criticism as a fictive construction hovering somewhere between reality and imagination. As is the case for so many creative people on artistic journeys, I cannot say exactly why this idea came to me, except that it arrived almost fully formed and immediately brought a sense of optimism and clarity to a sad and muddled situation (Csikszentmihalyi, 2013).

When I described what I wanted to do – to write a semi-fictional, magical sort of hero's journey story that was based on reality – to my doctoral advisor, I was at first met with a worried look and a healthy dose of push back. "Why not just get it done in a straightforward way, put it behind you, and keep moving forward?" she asked. Her questions were, as I experienced them, a compassionate recognition of the difficulty of my situation. I understood and also worried that trying out a new literary mode in the midst of writing my dissertation might make the process unnecessarily complex or more drawn out than it had to be, when I might simply want to put it behind me and move on. These were the concerns I heard emanating from her apprehension, and I was grateful to have them openly recognized, as they were also my worries. I did want to move forward, and – if we are being honest – I also wanted to complete my doctorate sooner rather than later. I couldn't imagine going through another year of data collection and analysis. But the other reality was that I couldn't move forward with my dissertation without looking backwards through the data, and I didn’t know how to look at the data in any other way except with magic on my side, so to speak.

A more meaning-full representation. Once I’d committed to the intention to use magical realism, I found that I was able to present a representation of reality that more accurately and meaningfully captured the essence of the situation for me at Desert School than if I had written it in a more traditionally descriptive but entirely empirical manner. What I mean to say is that telling the story of my experience starting a new ecological school as a hero’s journey filled with both realistic and magical landscapes aspects was more useful to the aims of my research than telling a factual “truth.” I set out to examine the experiences of ecological place-based educators in their first year at a new school, and instead of getting mired in the heartache of losing my job while trying to sort through the data, I was able to locate a path through the situation that allowed me to create healthy distance from reality while remaining close enough to see and tell of truth and beauty as it emerged (Rezac, 2019). I think of this as my own expression of *open-hearted connection* and the need to make space for the emotionality of educational situations. When I looked at the situation as a adventurer moving through an unfamiliar and magical landscape, I was able to see intentions clearly, identify the ways in which they were realized, and locate the artistry in our collective work as an integrated story. When I imagined the process of creating an ecological school as an idea situated between reality and fantasy, I saw that there was perhaps more meaning in that idea than in setting out to tell the story exactly as it happened.

Offering alternative realities. Understanding the history of magical realism and its origins in art criticism helped me to not only employ this literary mode with greater understanding of its elements but also helped me appreciate how magical realism could be useful to educational criticism. Unbeknownst to me when I chose/was chosen to use magical realism, there is an interesting connection between educational criticism and magical realism, namely, that of art criticism. Educational criticism, as developed by Eisner, is “part of a tradition that has long flourished in the arts and humanities” – that of the critic, whose connoisseurship guides their appreciation, “observations, and judgements of daily life” (Eisner, 2017, p. 121). The critic offers to the rest of the world critical impressions of what they see and hear through their specific connoisseurship, with the aim of shedding new light on a situation. “In the realm of art,” writes Eisner, “critics follow artists. That is, critics do not provide the specifications artists are to fulfill; their relationship to artists is not one of architect to builder. Rather, critics are commentators, interpreters, evaluators, and, at their best, educators” (2017, p. 121). The art critic Franz Roh coined the term “magic realism” in an effort to “focus on the context in which a work was produced” (Eisner, 2017, p. 121); the context of magical realism being that which emerged in the post-Expressionist era.

In the 1925 essay in which he first introduced the idea of “magic realism,” Roh wrote of the difference between the “fantastic, extraterrestrial, remote objects…[the] shocking exoticism” of Expressionism and the welcome return to reality ushered in by the “new style” (1995, p. 17). Like an educational critic “at their best” (Eisner, 2017), Roh wrote in such a way as to educate the reader and help the viewer understand the context of the work of art – the paintings, in this case – differently than they would have without this critical insight. Instead of post-Expressionism being simply the return from fantasy back to the humdrum everyday reality, Roh suggested that post-Expressionism be viewed instead as “a new style that is thoroughly of this world, that celebrates the mundane” (1995, p. 17). Roh, in naming magical realism as such, offered not only a new way of seeing post-Expressionist painting but a new way of seeing the world 1995). Providing examples that contrast Expressionist and post-Expressionist painting, Roh (1995, p. 17). writes:

> Instead of the mother of God, the purity of a shepherdess in the fields (Schrimpf). Instead of the remote horrors of hell, the inextinguishable horrors of our own time (Grosz and Dix). It feels as if that roughshod and frenetic transcendentalism, that devilish detour, that flight from the world have died and now an insatiable love for terrestrial things and a delight in their fragmented and limited nature has reawakened.

In other words, Roh saw this new style of painting as an expression of what environmental activist and deep ecologist Joanna Macy calls “a wild love for the world” (Tippett, 2010).

It is interesting, then, to consider that the work of the educational critic is also to look closely at the world – particularly the world of education – and find delight in its “fragmented and limited nature.” By delight, I do not necessarily mean that educational critics find only joy, but that they also experience the charm and allure in trying to see and hear the subtle and surprising details of the enterprise of education (Uhrmacher et al., 2017). More than that, the educational critic, like the art critic, attempts to “make the familiar strange” in order to awaken the imagination towards alternative realities (Greene, 1995; Uhrmacher et al., 2017, Kindle Loc. 208). As Eisner explains, “What the critic strives for is to articulate or render those ineffable qualities constituting art in a language that makes them vivid…The language of criticism, indeed its success as criticism, is measured by the brightness of its illumination” (1976, p. 141).

Finding ways to let go. I was able to step into the role of the critic from a new perspective by using magical realism within this educational criticism, and particularly throughout the auto-criticism. Magical realism allowed me to release my hold on *my* reality as "the only truth" and instead to examine the situation of Desert School from an unaccustomed angle (Greene, 1995). This change in perspective, in a sense a stepping back, helped me to better see, hear, and portray the spirit of the findings more vividly and accurately, allowing me to even "celebrate the mundane" a bit with *imaginative diligence*. It allowed me to find value in a situation that, at the time, seemed to me destructive and disempowering. It may seem strange to say that a fictional text could be more accurate than a factual one, but, as I have written elsewhere, without magical realism I was stuck in a negative and highly subjective midframe. This space was not conducive to "describing, interpreting, evaluating or appraising" what I saw with any sense of openness or curiosity that criticism requires (Eisner, 1976, p. 142).

Rezac, in exploring and evaluating auto-criticism, explained that sometimes the chosen methods of analysis can seem surprising or unusual, especially to those outside of arts-based research, but it is necessary to find the process that best suits the researcher. She writes, "The process and presentation of findings of an auto-criticism can take shape in many ways, much like an autoethnography" (Rezac, 2019). She chose to use painting and journaling as her main methods of analysis; I found magical realism to me the most useful process and presentation for my own work. Rezac writes of the need to figure out how to "let go" when conducting auto-criticism in order to more "objectively address the subjective" and to "[honor] the various ways in which we both live and tell our stories (2019, p. 23). By turning to magical realism, and reconstructing my experiences through the characters of The Snail, Lalo, and others, I was able to return to the situation with fresh eyes and "the clarity of a new day" ushered in by this innovative style (Roh, 1995, p. 17).

Magical realism helped bring this educational criticism to life by encouraging me to critique the situation clearly, realistically, but with an eye for the places where magic emerged from the "the world of reality," which for me was in an ecologically diverse and aesthetically wonderous world (Roh, 1995, p. 17). I was able to remember what I loved and appreciated about my experience at Desert School by relearning to celebrate the mundane and describe the world I knew, with its ineffable magic and all (Faris, 2004; Roh, 1995). You cannot "do" magical realism without a healthy dose of realism. One must describe the world with utmost precision, so that the reader can experience the setting and be drawn in so much so that when the magical occurs, it is jarring and confusing against the otherwise recognizable reality (Faris, 2004). Magical realism helped me experience and describe the situations and relationships – of people, ideas, and places – that may have otherwise gone overlooked or discarded in my own frustration at the end of my experience at Desert School.

Emerging from the margins. Turning towards the literary use of magical realism, this style has for decades helped writers cultivate "calm admiration of the magic of *being*, of the discovery *that things already have their own faces*, [meaning] that the ground in which the most diverse ideas in the world can take root *has been reconquered* – albeit in new ways" (Roh, 1995, p. 20; emphasis added). When writers, particularly in Latin America in the 1960s, adopted this style and made it their own, it was – and still is – used as tool for magnifying the voices in the margins. While I am not marginalized in a sociological way – I am white, middle socioeconomic status, well educated, healthy, able bodied, cisgender, for example – both my role and the approach to ecological place-based education were often marginalized at Desert School.

I was the only person trained in ecological science and ecoPBE pedagogy. I was the only American. I was the only one trained and experienced with project-based learning and holistic, emergent education approaches. One member of the SLT repeatedly suggested that instead of being located in the Senior Leadership office where I daily interacted with teachers and students, I should just go stay out in the garden and the ecodomes and wait for teachers to visit. While I laughed at this at the time, I also recognized the disconnect between what we were saying we were trying to create at Desert School, and others' ideas of what ecoPBE was (something extra and accessory-like) and where it happened (outside, in the garden, when there was time). In the school year after my position was cancelled, two teacher participants explained that ecoPBE had fallen more towards the margins, no longer required to be fully integrated into the curriculum, but rather taught through a once weekly class not necessarily related to the classroom projects. "There is no one like you there keeping us accountable in this regard," one teacher participant told me. Still the school publicly advertises itself as ecological and place-based in its approach, and there is perhaps no one there who knows differently or wonders about how subtle forms of greenwashing show up in education (Greenwood, 2010).

I do not share this to critique Desert School unnecessarily, but to offer examples to demonstrate how the magical realism revealed a more meaningful if fantastical rendering of the situations I experienced. The journey across the desert by myself in the beginning, guided by my vision – Lalo and my dreams of ecological education for all – was exciting, difficult, and exhausting, much like the process of creating the entire Desert School curriculum and ecological framework by myself. The destruction of the learning garden in the end accurately if magically allowed me to show both my personal loss as well as my fear that the structures and systems built over a year would be dismantled, or simply buried, as ecoPBE fell away. The use of magical realism helped me to find my voice in order to "reconquer" the ground on which I had stood for almost two years trying to build something unique and unfamiliar and at the edge of contemporary educational approaches so that I might make meaning from this situation and share it with others.

Resolving ethical dilemmas. From an educational research perspective, magical realism was helpful for me in establishing and maintaining ethical efficacy throughout the process. The use of magical realism contributed to the expression of imaginative diligence as I tried to find a way to maintain the meaning of the story without sacrificing the confidentiality of the participants or diminishing the reputation of the school. In discussing the process of writing up and sharing research publicly, Glesne (2016, p. 170) writes:

> We are reminded that what we share is only a partial representation and generally one of our choosing. It never tells the full story or provides all the perspectives on an issue. The onus is on us to be rigorous in our work and thoughtful in what we represent, considering the feelings and perspectives of those we represent and honoring their voices.

While there are certain aspects of this story that I would have preferred to simply tell as it happened so that it could be judged by others, I had to ask myself what value there was in telling the honest truth if, in the telling, it ended up casting certain characters in an unflattering light against which they might take offence. As Bochner and Ellis explain with regards to the ethical dilemmas inherent in autoethnography and similarly personal forms of qualitative research, "Whatever you do, your goal should be to reproduce what happened in a ways that preserve the reality you are seeking to depict for the reader…We have to figure out how important it is to tell it, think about the potential rewards and risks, and determine if the work has something important to offer other by putting meanings into motion" (2016, p. 151-152). Similar to autoethnographers' use of fictional stories or composite characters, magical realism helped me to tell the same story in a different way while respecting the relationship between my participants, the site, and the Desert School community (Bochner & Ellis, 2016; Ellis, 2004).

Recognizing Doubt, Acknowledging Scholarship

The process of using magical realism was one that brought up a lot of doubt. As a novice educational researcher, I am actively working to "establish a publication record," a practical requirement for academics wanting to be taken seriously and make an impact (Eisner, 1997). My advisor noted that she initially worried about me using such an approach because my dissertation could be a first steppingstone, and I would need to defend my choice of such a fictional arts-based approach often in the early days. And this was a valid response. Eisner (1997) is clear to point out that "we need to be sure we are not substituting novelty and cleverness for substance" in our experimentations with alternative forms of representation (p. 9). There is a commitment to *imaginative diligence,* in this sense. Barone and Eisner (2012) encourage arts-based researchers to be clear about the purposes their work serves so as to establish credibility in the field. One way to do this is by "elaborately explicating the reasons behind methodological and compositional choices" (p. 119), which I have tried to do throughout this dissertation. My intention was to be clear from the outset that the reader needed to be willing to suspend their belief and dedicate themselves to reading for meaning rather than truth.

That said there is much in this work that is also traditionally descriptive and empirical in nature, both in the magical realist constructions as well as within the more traditional educational criticism vignettes. The descriptions of the teachers through vignettes, for example, are told exactly as observed from my perspective, as one would find in a more traditionally represented qualitative study. I worry even now that the effort and scholarship that went into collecting valid and credible data might get lost in the novelty of magical realism, that doubt would be cast on what was meaningful because of how it was represented in form. At the same time, I worry that juxtaposing magical realism against literary but empirical descriptions may diminish meaning I hoped to convey through fictional storytelling. I imagine that readers could simply say, "Oh, here is the real scholarship," and set the magical realistic sections aside as something cute or nice to read, but ultimately not important or built upon reality. While this process has strengthened my belief in arts-based research in general, and in the need to raise the prominence of alternative forms of representation (Eisner, 1994; Eisner, 1997), it still feels like a gamble. As one of my favorite actors and producers, Reese Witherspoon, once said in an interview about her work and passions, "I am just taking a risk and betting on myself" (Gross, 2019), and ultimately hoping it pays off somewhere down the line for the improvement of education and research as a whole.

In many ways, once I started with magical realism, I yearned to write the entire dissertation in this style as I found so much delight in creating and sharing meaning from this experience in such an imaginative and interpretive format. Nonetheless, I ultimately decided that the juxtaposition of magical realism and non-fiction literary descriptions would better support me in establishing credibility as a novice researcher while starting me down the exciting path of arts-based research. This juxtaposition allowed me to demonstrate that I could conduct and present qualitative research findings in a form more readily accepted in academia and therefore "counted" as research (Eisner, 1997, p. 5), while honoring my own way of being "seeking to discover the limits of [my] fertile imagination" through an alternative form of representation (Eisner, 1997, p. 5; Rezac, 2019).

Finding Joy, Sharing Wonder

As much doubt as there was in this process, there was also a lot of joy and certitude gained from the experience. One of the greatest gifts that the world offered me through this process was the chance to return to my deep-seated belief in the importance of emotions like wonder, love, and passion in ecological place-based education and personal passion and artistry in educational research. Parker Palmer writes that "We teach who we are. Teaching, like any other truly human activity, emerges from one's inwardness, for better or worse" (2017, p. 2). In describing the landscape of Desert School, from the sand dunes to the city to the tiny space of the learning garden, I was able to infuse my telling of the story with the sense of wonder and connection I feel towards the natural world and the places in which I have been lucky enough to dwell. Allowing myself to be held by a ghaf tree or watching with awe as a garden blossomed in front of my eyes helped me to return to the sense of wonder I have about the world around me and share it with other through magical ideas. Parker Palmer also writes, "If we want to grow as teachers – we must do something alien to academic culture: we must talk to each other about our inner lives – risky stuff in a profession that fears the personal and seeks safety in the technical, the distant, the abstract" (2017, p. 12). In imagining characters like Lalo, I was able to incorporate a spirit of playfulness and delight back into my work, while showing that even I – the resident expert – needed a guide along the way. In so many ways, this was my expression of open-hearted connection.

As I wrote, I realized how, like Lalo, play and enthusiasm guided my way of being - with the teachers specifically and as an ecological educator in general. When I lost my job, it was easy to forget this lightness and playfulness, and I failed to see it initially when I started to analyze the data I had collected. As I sorted through the data, I was looking at it all superficially: what can this give me to get this over and done with, was the underlying sentiment guiding my analysis. I was trying to find a way to ensure that I didn't have to talk about the difficult situation of losing my job in the middle of my research, of feeling dislocated and lost in the world. I wanted to stay "professional" and "academic." This is not how I move through the world, however, and by trying to stay on the surface, I was stifling my own story and missing opportunities to find meaning in the madness. By introducing the element of magic within reality, I was able to regain depth and relationship, with myself and the data, to see the themes like hopeful visions and open-hearted connection start to poke out from beneath what looked to me at the time like one big pile of rubble. Using magical realism helped me to see that "one world may lie hidden within another" (Wilson, 1995) by reintroducing me to the love I had for the people and place that was Desert School while I worked there and helping me recognize my own ecological resilience and integrity despite disruption. Instead of looking at the data with detachment and cynicism, I was able to move through it with more curiosity and wonder, just as I encourage my teachers and students to do within the real world.

Research Question 5

Q5 What are the implications of the findings for ecological, place-based schooling in particular and education in general?

In this study, two sets of themes organized the findings as related to four of the five dimensions of the school ecology: the intentional, structural, curricular, and pedagogical. With regards to the intentional, the teachers and I expressed a commitment to *a hopeful vision, holistic learning, and responsive action* as ecological place-based educators. These intentions were examined through the evaluative framework of ecological mindedness (Moroye & Ingman, 2013) and found to be realized through the structural, curricular, and pedagogical dimensions as expressions of ecological integrity. For Moroye and Ingman, ecological integrity can, most simply, be thought of as the actual manifestation of ecological mindedness through actions that express care and interconnectedness; there is an "alignment of beliefs and actions" which are expressed as wholeness and integrity (2013, p.604). Ecological integrity was also an overarching theme that emerged from examination of the intentions and practices of the Desert School educators.

A complementary set of themes emerged when examining the practices of the educators with regards to artistic judgement and creative attitudes. Within this study, creativity was thought of as the way an individual uses their skills, knowledge, and personality to do something differently (Csikszentmihalyi, 2013; Kaufman & Gregoire, 2015) or at the least to discover something new *for themselves* through action (Eisner, 2002a). Artistry was thought of the way in which an individual uses their skills, knowledge, and personality to carry out a task or respond to a situation with grace, intellect, intuition, imagination, and flexibility (Eisner, 2002a, 2002b; Rubin, 1983). *Imaginative diligence, open-hearted connection, and deliberate spontaneity* were identified as the thematic expressions of artistic judgement and creativity attitudes. These arose from the *community ecological artistry*, which, similar to the overarching theme of ecological integrity, showed up as a foundational theme from which *imaginative diligence, open-hearted connection, and deliberate spontaneity* emerged. In the evaluation of the findings, I have defined ecological artistry as the uniquely creative attitudes and artistic judgements that arise from the dynamic interaction of people and places coming together to create something new and beautiful.

In considering the implications of the findings of this study for both ecoPBE and education in general it is useful to return to the idea of the learning garden, the focus and setting of much of this dissertation, both literally and figuratively. In education, the learning garden is a place where, ideally, educative experiences happen and experience, intellect, and emotion find continuity and interaction (Dewey, 1934). From coming to know place to preparing of the land, to the planting of the seeds to the celebration of the harvest, constructing a learning garden creates a space where ecological integrity can be cultivated, in turn encouraging and nurturing the expression of ecological artistry as *imaginative diligence, open-hearted connection, and deliberate spontaneity* in teaching and learning. Creating and maintaining a learning garden is not an easy task, as the complexity of creating a healthy, resilient, and beautiful space requires a diversity of knowledge, skills, and values, not to mention a passion and penchant for extending care to other living and non-living things. In my experience, the challenges and obstacles presented by the reality of a learning garden, and similarly ecological place-based education, are often great enough to dissuade educators from taking on the task of imagining, designing, building, and tending to the myriad elements inherent in bringing a garden – or ecological place-based education – to life. In discussing the implications of the findings of this research, I believe we need to turn our focus to addressing the barriers currently preventing ecoPBE from fully maturing while also identifying "small openings" that can provide fertile grounds for ecoPBE to take root. From the examination of the artistry of ecological place-based four big lessons arise, and below I present these four lessons and their implications for the improvement of ecoPBE in particular and education in general in the context of creating and tending to a learning garden.

Lesson one: knowing the place. The process of building a garden or learning a new approach to teaching, such as ecoPBE, is neither simple nor easy. It takes a lot of collaboration, resources, knowledge, and passion. Perhaps most importantly, it requires a desire to know a place completely and a willingness to remain curious in the presence of familiarity in order to decide where and how to build a learning garden.

Barriers to knowing place. Orr (1992) tells us that place is overlooked in education for at least three reasons: First "the ease with which we miss the immediate and the mundane" (p. 126) makes it easy to simply not pay attention to that which is right in front of us. Second, "place itself is a nebulous concept…defined by human scale" (p. 126). Third, "place by definition is specific, yet our mode of thought is increasingly abstract" (p. 127). Ecological literacy, ecological mindedness, and sustainability education are rarely emphasized in the training and professional development of teachers, nor are they well integrated into higher education course in general (Linnemanstons &

Jordan, 2017; Sterling, 2001), and many studies show that most teachers, at all levels, are neither ecologically literate nor are they ecologically minded (Liu et al., 2015; Pe'er et al., 2007; Puk & Stibbards, 2012; Timur et al., 2013). All of these reasons, these barriers, are compounded by the fact that we are "a displaced people" whose local landscapes are no longer the places where we get nourishment, physically or spiritually, or livelihood in the form of jobs or recreation (Orr, 1992, p. 126).

The story of educators at Desert School told in this dissertation offered an extreme example of this concept of displacement, abstraction, and disconnect; each and every one of us was working and living in a foreign land, far from home and our families, in a natural environment as exhilarating and captivating as it was harsh and even inhospitable. For many of us, this was part of the adventure – to journey off into the unknown, to explore new places, to push our boundaries – but it did not make our work of bringing an ecological place-based a school to life any easier.

For me, and I believe for the teacher participants in this study, the process of coming to know place through the pedagogical approach of ecoPBE was an expression of open-hearted connection, an ongoing practice of looking at our school, city, and fellow teachers with a sense of curiosity and a desire to build relationships – to other people, to this place, and to our past and present educational experiences. We – and I include myself here, because even as a leader, I was learning - spent the first year simply getting to know our place and this new approach to teaching, asking ourselves, "Where are we now?" and "Where have we come from?" (Orr, 1992, p. 130), as we attempted to integrate our past and our present in order to situate ourselves in place more firmly.

In designing the original projects, I explored the local landscape, then provided teachers with project-specific examples of place-based experiences that would support both their own and their students' connection to Desert City: local experts willing to share information, unique spaces to visit, and on-campus opportunities for grounding learning in place. Mr. Kit learned quickly to look to the local for inspiration and educative experiences, organizing field trips to local parks, beaches, art shows, and businesses in order to connect the curriculum to the local environment. Ms. Tanya and Ms. Liz experimented with using the spaces around the campus in ways that were new and exciting for them and their children: reading in the reflection garden, phonics in the ecodomes, science and digital technology in the learning garden. We expressed our nascent ecological artistry in the variety of experiences we offered our students as we developed our connection to place and deepened our understanding of ecological place-based education in Desert City, at Desert School. We learned to define and redefine the scale and boundaries of our work with open hearts and minds, day after day, slowly but surely making connecting our teaching to place. We did this in spite of the many demands on our time, the limits of our knowledge and experience, and the many structural obstacles put in place.

Creating openings for knowing place. What I wished for our teachers, and for myself as their leader, at the start and throughout the year was also what I offer here as recommendation for improving ecological place-based education and supporting artistry in teaching, and it is this: that we intentionally create opportunities for teachers to know place, to study place, and to "learn the arts of inhabitation" that allow us to "live" – and teach- "well in place" (Orr, 1992, p. 130 and 128, respectively). By integrating the study of place through experiences such as conducting a “regional survey” (Mumford as cited in Orr, 1992), “investigating local instructional resources” through interviews and scavenger hunts (Knapp in Gruenewald & Smith, 2008), or learning to “read” the landscape through ecological clues (Wessels, 2005), educators familiarize themselves with the people and places in which they live and teach. I believe that this intentional exploration of place would offer educators the means to know place in a way that is both interesting and novel to them and inspiring for teaching and learning.

Cameron describes a practice he requires his students to take part in over the course of a semester, in which they “choose a place within half an hour’s walk of their home and commit to visit it for several hours a week for each week of the semester” (2008, p. 284). They were not given much direction for “what to do” in their place, and they were free to explore the place they chose from their unique perspective and interests (Cameron, 2008, p. 285). Some students became interested in the ecology of place, others in the stories, and other still in the spirituality of place. Cameron’s intention for integrating this practice into their education was one of creating opportunities for connecting to place and recognizing “the power of inhabitation,” the same idea that Orr expresses when he writes of “learning to live well in place” (1992, p. 126). The personalized approach to this sort of experience likely meant that students created their own unique connection to place in a way that was meaningful to them specifically, and not simply a regurgitation of someone else’s understanding of place or a theory they read about. Their connection to place required “the combination of intellect with experience” (Orr, 1992, p. 128).

Ideally, these sorts of experiences would be supported by an enthusiastic, experienced, and knowledgeable mentor, who, over time and multiple occurrences, would help teachers integrate their unique connection to place into their practice of ecoPBE, nurturing their ability to do this “education of a certain kind” with the grace and beauty that comes with familiarity and imagination (Eisner, 2002a; Orr, 2004, p. 8). Through these experiences and the guidance of a compassionate and experienced ecoPBE mentor, I believe that teachers would learn to love and connect to place in ways that supported ecological place-based education. This connection to place is currently difficult to cultivate with our fast-paced modern lifestyles and standardized approaches to education, and so it is important that we seek to identify spaces in which it might be possible to know place. Chawla has described how the development of environmental behaviors, which are in many ways similar to ecological integrity and artistry, is most directly influenced by the presence of an enthusiastic mentor and experiences in local – ideally natural – settings (1999). Numerous ecoPBE advocates repeat this refrain in their effort to encourage the raising of “wild children” who actively love and care for the world (Louv, 2005; Sampson, 2015). In order to improve ecological place-based education, I believe we need to start raising “wild teachers” as well, and this starts by opening our hearts and making connections to the spaces around us so that we may truly know the places in which we teach and live.

Outside of ecological place-based education, learning to know place may reinvigorate teaching practices in general by inspiring curiosity in the local landscapes and inquisitiveness regarding local history and culture. Educators may find, like Mr. Kit, that there are better, more interesting ways to teach about the Romans and Egyptians, or like Ms. Tanya that even a simple school yard scavenger hunt presents an opportunity to imbue teaching with a sense of playfulness and connection while still meeting the standards. In this way, knowing place is an opportunity to foster ecological artistry in unforeseen, and previously unknown, places.

Lesson two: preparing the ground. Once you have come to know place and decided upon a place to situate the garden, the work is far from over. Pulling out rocks and picking up sticks: these are the pastimes of many a gardener. Constructing arbors and building soil: these are the labors of love that go into preparing the ground for planting. Before planting and sowing, it is important to consider how to give the tiny seeds the greatest chance of survival in the world outside the greenhouse doors. Please note that I do not say tilling or digging up or plowing under, as I do not believe it is necessary – or even particularly beneficial – to upend an ecosystem in such an abrupt and disruptive way. No: preparing the ground is an act of imaginative diligence, of hopeful imagining and conscientious labor for a day somewhere off in the future.

Just as it is imperative to prepare the ground for planting before digging in the seedlings, in order to improve the practice of ecological place-based education we must invest in finding ways to overcome, and ultimately remove, the boulder-like barriers that hinder the implementation of artistic and creative ecoPBE. Mr. Kit used the phrase of having to deal with “a bunch of crap to make something fertile.” This idea always made me think of the regenerative agriculture practice of “growing soil.” Growing soil is a process of bringing in the plants, animals, and practices necessary to build healthy soil. As regenerative agriculturalist Gabe Brown puts it, “Fostering life is the key to transforming dirt into soil” (2018, Kindle Loc. 520). In other words, if you want to increase the vitality of a system, you have to be willing to make room for more life. In nature, life begets life. In education, creativity begets creativity. There is an imperative to create a culture that cultivates the qualities we want to develop in our teachers. In doing so we just may turn dirt into soil and teachers into creative educators, reinvigorating the experience of schooling for all, and preparing the ground for future planting (Gallup, 2019; Miel, 1961; Niehoff, 2018; Tubin, 2009).

Barriers of time. When it comes to expanding creativity in ecological education, time and freedom are two barriers that must be addressed. By time, I mean providing teachers with adequate time to adapt to ecological place-based approaches. At Desert School, the board often wanted to see evidence of ecoliteracy yesterday, not years down the road. While I shared this desire, I also realized that the teachers themselves were adjusting to the new way of teaching. As Anderson (2017) noted, and has been shared elsewhere in the study, it often takes *years* for educators to really embrace ecological place-based teaching fully. In a survey conducted by Gallup (2019) around creativity in learning, teachers often noted that they simply did not have enough time to integrate new technology into their lesson plans. For most teachers, ecoPBE is a new technology, a new way of interacting with the world and acting in the classroom.

Creating openings of time. We can create a culture that cultivates artistry in ecoPBE by setting reasonable timelines for the integration of PBE into more traditional teaching approaches, while at the same time providing teachers with ample time to plan new lessons and projects with imaginative diligence and the aims of ecoPBE in mind. A powerful example of creatively addressing the demands of time on implementing innovative and transformational education can be seen in one school district in South

Carolina, which recently transitioned from a traditional curriculum to completely Montessori curriculum (Fleming, 2019). Montessori, like ecoPBE, emphasizes a holistic approach to teaching and learning and student-centered approaches, among other aspects (Hansen, 2007). The entire transition to Montessori took a long five years, but the principal and superintendent planned it this way, intentionally setting realistic goals that helped them to successful achieve their vision of making learning “interesting” and “relevant” (Fleming, 2019). Instead of transitioning all teachers in one year, teachers were trained in small batches over five years, and students were introduced to the method first through elective courses then slowly through the entire curriculum. Importantly, teachers received in depth and on-going training in the Montessori method over this entire period. Parents were also transitioned in and required to sit in on classes and attend informational meetings (Fleming, 2019). This sort of intentional planning is imaginatively diligent in its innovation and organization, showing care for teachers, students, and families, while also creating the time needed for teachers to be able to get comfortable and knowledgeable in their new approach without becoming too overwhelmed and overloaded. Schools working to transition to ecological place-based education, even those like Desert School dedicated to ecoPBE, would benefit from setting realistic timelines and providing ample professional development to teachers over the course of their transition to the new approach.

Addressing this barrier of time in the preparation for innovation like ecoPBE would also be a benefit to education in general. It is no secret that teachers often feel pressured for time. The curriculum is full, the days are long, and the standards to meet numerous. In 2019, Gallup conducted a poll to determine the state of creativity in teaching and learning across the United States. A main finding was that, regardless of the fact that teachers, students, and parents all wanted more opportunities to express and teach for creativity in schools (p. 2), there were numerous barriers standing in the way of the integration of new technologies to support creativity to teaching. Not surprisingly, time was identified as “a significant barrier to creativity in learning and technology use” (p. 36). “About a third of teachers agree that they do not have enough time or enough training (or both) to [new technology] into their lesson plans” (Gallup, 2019, p. 36). Thoughtful and creative reconfiguration of timetables and timelines with regards to professional development, curricular and pedagogical adoptions, and on-going planning time provide teachers with a landscape that is ready to be planted.

Barriers of freedom. Freedom, or autonomy, is another obstacle that must be acknowledged when aiming to cultivate schooling environments that foster artistry and creativity in ecological place-based education. As noted in the Gallup creativity survey, creativity increases, for both students and teachers, when teachers are given more autonomy (2019). Similarly, teachers express more creativity when they are given the flexibility that allows for “individual differences and for unusual circumstances” (Miel, 1961, p. 231). As Miel writes, “The one whom duty is always calling to abide by the letter of every regulation may be too compulsive to be highly creative” (1961, p. 230). Mr. Kit noted this early and often in his experience with ecological place-based education when he expressed the desire to “be trusted to do [his] job.” Harris and deBruin (2018) explain that spaces, structures, and systems that reflect and facilitate an “atmosphere of trust” are the ones in which creativity is most likely to occur (p. 225). Finally, in ecological place-based education is it important that the school structures provide teachers with the freedom they need to do their job with artistry. Eisner notes that a teacher who demonstrates artistry "discover[s] ends through action" (2002a, p. 155). The ends are emergent, unknown, waiting to be discovered by the artist (Eisner, 2002a). When teachers are constantly stubbing their toes against rocks in their path, like inflexible timetables and burdensome forms of documentation and evaluation, it can be difficult for them to do their job artfully.

At Desert School, the teachers often spoke to me about the need to rearrange their teaching schedule and increase the length of teaching blocks in order to make room for more and better ecoPBE activities and lessons. This is not uncommon in schools in general but scheduling and timetables are particularly critical in allowing for creativity and artistry to flourish (deBruin & Harris, 2017; Demarest, 2015; Harris & deBruin, 2018). I collected feedback throughout the year to streamline their project planning process and diminish the need for "documentation and repetitive paperwork" that can hinder a teacher's expression of creativity (Harris & deBruin, 2018, p. 226), often only to be overstepped by demands from others for documentation and "onerous levels of oversight" with regards to teaching and planning (Harris & deBruin, 2018, p. 226). Ms. Tanya, Mr. Kit, and Ms. Liz often expressed their ecological artistry *only when* they disregarded the systems and structures they felt limited their freedom, such as Mr. Kit and I agreeing to document his planning through pictures or Ms. Tanya rearranging her schedule to bring in an artic explorer. Unfortunately, despite my efforts with higher levels of leadership, we were unable to make many of the requested timetabling and documentation changes in the first year, and many teachers complained about the lack of flexibility right through the end of the year. Clearing the field of barriers suppressing freedom and autonomy is critical to the improvement of ecological place-based education.

Openings for freedom. But more than just removing barriers, it is also important to build scaffolds on which ideas, like vines, can grow with support and structure. This is a way of finding and widening the “small openings” that allow ecoPBE to germinate (Greenwood, 2010). The ecoliteracy framework I created for Desert School was my attempt at providing a supportive trellis for teachers to use as they strengthened their understanding of and skills with ecoPBE. Some argue that providing these sorts of frameworks or sets of standards or criteria difficult or even counter-intuitive, because the education provided through the ecoPBE approach is, by nature, specific and unique to anywhere else (Gruenewald, 2003; Hodgkinson, 2011). Still, the teachers at Desert School explained that having some sort of framework to use was helpful as they learned to plan and teach through ecological place-based methods. In many ways, the framework gave them more autonomy because they could refer to it to guide their planning, even if I was not present. This is how the teachers often used it, and this was my intention in creating it. Just like the tiny sapling often outgrows its wooden stake, I wanted the teachers to develop strong roots that would support and anchor them whether or not I was there to hold them up. Similarly, the North American Association for Environmental Education, Shelburne Farms, The Center for Ecoliteracy, and even individual school districts, such as Boulder Valley School District in Colorado, offer frameworks for planning, implementing, and even evaluating education focused on ecoliteracy and environmental education. Until ecoPBE is securely rooted in our education system, including higher education, these sorts of supportive structures help ready the landscape for the growing season, so to speak.

Removing the barriers that block freedom and providing scaffolding to teacher autonomy would benefit the improvement of education in general as well. As Niehoff writes, “If we want authentic and consistent creativity, from students and educators, we need to remove barriers that are foundational to our systems. Many rules, policies, expectations, assessments, data collections, curriculum, instructional practices, grades and traditions not only discourage creativity, but explicitly inhibit it” (2018, p. 3). It takes hard work and creativity to not only suggest these changes, but also to implement them. Like a school transitioning to a new approach or teachers learning a new technology, it takes time, organization, and commitment to experimentation and critique (Fleming, 2019; Gruenewald, 2002). By addressing the barriers of time and freedom - with regards to ecoPBE and education in general, we can start to change dirt into soil, fostering life and preparing fertile ground for ecological artistry to take root. In this healthy and vibrant space, free of barriers and full of supports, ecological artistry just might have room to grow.

Lesson three: planting the seeds, tending the land. The garden location is known, the ground prepared – what is left but to plant the seeds and tend the land. During the growing season, as the time between the early spring preparation and the final harvest is known, there is a cyclical process of planting, transplanting, pruning, and gathering. The gardener is constantly observing, reacting, tweaking, and innovating. There is an air of deliberate spontaneity to this season, in which it is just as important to be meticulous as it is to take risks and improvise. The gardener is constantly learning and changing, just like the plants and the land. It is important that the gardener be knowledgeable as well as curious, and that they are able to find answers to their questions in creative ways in order to have success in the growing season. But more than that, they must be caring, even loving, for it is in from love that inquiry arises (Orr, 2004).

Barriers of knowledge. In seeking to improve ecological place-based education, we must address the issue of ecological knowledge in order to cultivate creativity and artistry in ecoPBE. This means creating opportunities for in-service teachers to develop their understanding of ecological place-based education as a pedagogy as well as build their knowledge ecological theory and science through on-going and personalized professional development. True creativity is unlikely without some depth of knowledge in a given field, such as ecological place-based education (Csikszentmihalyi, 2013). "A person cannot be inspired by a domain unless he or she learns the rules…You cannot transform a domain unless you first thoroughly understand how it works," writes Csikszentmihalyi (2013, p. 89-90). Similar Eisner emphasizes that teachers, in the search for efficiency and economy in the complexity of schooling, tend to rely on the "skills they possess, and these may not be adequate to the task" of a new pedagogical approach, like ecoPBE (1992, p. 624). Furthermore, he suggests that artful teaching, like creativity, is difficult to achieve if one is too busy grappling with unfamiliar content or and skills. He writes, "If a teacher does not know what to teach or is insecure about a subject, attention must be paid to matters of content…It is difficult to be pedagogically graceful when you are lost in unfamiliar territory" (Eisner, 1992, p. 611). EcoPBE pedagogical content knowledge and skills, as much as intuition and innovation, are necessary for teachers to educate with artistry and creativity (Csikszentmihalyi, 2013; Eisner, 2002a).

Openings for knowledge. I am not merely suggesting *more* professional development, but professional development of a particular kind, with a personalized focus. It is well known that most professional development provided to teachers is too generic, impersonal, and infrequent to have much of an impact (Eisner, 1992). More concerning is the fact that little is known about the provision of professional development related to ecological place-based education. Linnemanstons and Jordan (2017) explain, "Teacher professional development in topics and pedagogies relevant to PBE is infrequent. For example, only about 10% of teachers report having any training at all in EE before beginning their careers, with even less knowing about PBE" (no page). If teacher ecological literacy and mindedness is truly as poor as is often noted by scholars, then it is even more imperative that developing ecological skills, knowledge, and beliefs be recognized as critical to the improvement of ecoPBE. This is part and parcel of the establishment of a culture of professionalism within education, of treating teachers as dynamic and curious individuals (Gallup, 2019; Miel, 1961), but particularly true for the large population of teachers who might be considered ecologically illiterate (Liu et al., 2015; Pe'er et al., 2007; Puk & Stibbards, 2012; Timur et al., 2013) or not ecologically minded (Moroye, 2009, 2011; Moroye & Ingman, 2013). It is important to note that ecological *literacy* is often considered to be an expression of ecological knowledge or understanding whereas ecological *mindedness* is an expression of ecological beliefs (Moroye, 2009, 2011). That said, I use the term ecological literacy in a more complex and dynamic way, similar to the way Orr (1992) does he writes, "Ecological literacy, according to Garrett Hardin, is the ability to ask, 'What then?'…ecological literacy is driven by the sense of wonder, the sheer delight in being alive in a beautiful, mysterious, and bountiful world" (p. 86). To me ecological literacy is an amalgamation of the knowledge, beliefs, and actions that leads us towards the a more sustainable and just future.

Ms. Tanya and Ms. Liz often expressed the desire to develop their own ecological literacy and mindedness, to learn more about sustainability science and ecological education in different ways. They saw this as a means of becoming better teachers for their students and the school. Unfortunately, the opportunities for professional development in this area were few and far between at Desert School in its first year. The abundance of ecoPBE professional development initially outlined for teachers during the school year was significantly reduced as the year went on and priorities returned to math and reading. In order for teachers to integrate new tools and pedagogical approaches "they need continuous, just-in-time support that includes professional development, mentors, and informal collaborations" (Department of Education as cited in Gallup, 2019, p. 36). While I was able to provide some of this, I was only one person out of a staff of almost eighty with the depth of knowledge and experience in ecoPBE to support teacher development in any capacity, which limited my ability to provide "just-in-time" support for everyone every day.

With regards to in-service teachers and knowledge development, there is a wealth of potential for integrating ecological place-based education into the curricula such as teacher reading circles (Goleman et al., 2012), rethinking professional development with an eye towards civic action or storytelling (Demarest, 2015), or simply starting small and building up skills and knowledge with time (Anderson, 2017). There is much opportunity to expand on the limited literature around the specific design or evaluation of ecoPBE specific professional development on teacher implementation and efficacy with this method (Linnemanstons & Jordan, 2017). This is a potential area for future research in ecological place-based education.

Linnemanstons and Jordan (2017) examined the impact of place-based education (PBE) professional development on teacher implementation of PBE approaches in their classroom after the professional development course. The course, implemented over the course of a month, provided teachers with hands-on experiential learning, opportunities to connect with local experts and organizations, and time to prepare a unit that they would implement in their class during the school year. Interestingly, this professional development opportunity addressed both the development of knowledge of place and ecological concepts as well as the barriers of time and freedom in one program. Ultimately, the teachers expressed greater competence and comfort with PBE approaches as well as enthusiasm for improving upon the same unit in the coming year (Linnemanstons & Jordan, 2017). Over my career, I have provided ecoPBE professional development for teachers across the course of an entire school year to support place-based environmental civic action and sustainability education integration, which included similar elements to the professional development program studied by Linnemanstons and Jordan with similar feedback from teachers. Many teachers are eager for this sort of knowledge when it is presented as an option, and especially when it is offered with incentives such as providing time for planning with expert critique, providing hands-on applicable examples, and offering compensation for teachers' valuable time through stipends or education credits (Linnemanstons & Jordan, 2017).

Along with in-service professional development, there are entire education preparation programs, such as that at Antioch University New England and Teton Science School, that prepare teachers specifically for doing ecological place-based education through a series of courses designed to help teachers-in-training "tune [into] the particularities of the local community and natural environment" (Dubel & Sobel, 2008, p. 309). (Full disclosure: although I did not take part in the specific teacher preparation program located in the Department of Education at Antioch University New England (AUNE) which Dubel and Sobel describe, I attended AUNE and received my teacher certification within the department of Environmental Studies, which has a similarly place-based approach to both teacher preparation and the development of ecological knowledge). Throughout their course of study, the educators in AUNE's teacher education program experience myriad opportunities to survey the local landscapes, explore integrated place-based pedagogies, and deepen their knowledge of ecological systems that sustain life. Some of these opportunities are simple activities that take only an hour and can easily be integrated into a teacher's developing repertoire of ecological teaching activities (Eisner, 2002a). Others' learning experiences are the focus of state required, semester long core courses that are interwoven with place-based elements as well as the state mandated teaching standards, such as human development taught through a self-reflective lens focusing on the teacher's personal relationship with place throughout their life or place-based electives such as "New England Mammals" and "Food in Schools" (Dubel & Sobel, 2008, p. 309). All the courses are enhanced by their focus on the local environment and community, and students in the program often end up becoming as, if not more familiar, with this area of New England than the place from which they come.

As a recommendation for the improvement of education, I suggest schools or districts work to create “in-house” centers for ecological innovation that would provide similar, place-specific professional development and on-going support that is unique to the community and landscape in which the school is located. Much like the philosophy behind maker-spaces and design thinking, ecological innovation centers in schools would spaces located in a school or district – or in the case of Orr’s “center for ecological arts design” in a university – where teachers would find materials, inspiration, and collaborative experts who can help them to learn, tweak, and improve their planning and teaching to better address ecological place-based education. Ideally, the collaborative experts would be experienced educators, from that region, who also are comfortable working across disciplines and meeting teachers where they are, planting the seeds of ecological literacy while tending to their growth at with regards to knowledge and skills in ecological place-based education. They would engage in observation and feedback sessions with teachers in order to support more personalized professional development and “just-in-time” support (Eisner, 1992; Gallup, 2019). Sobel made similar recommendations in his initial presentation of place-based education when he wrote of “putting an environmental educator in every school” (2005, p. 53) who plays multiple roles.

Importantly, this collaborative expert educator should be able to clarify that ecoPBE is not about introducing a whole new curriculum, but rather nurturing specific elements and identifying opportunities to connect with the people and places around us and address the ecological and climate disruption through educational improvement. Sobel explained that this person would be a "staff support person," suggesting that they would not only benefit those teachers wanting to improve their ecoPBE approaches, but that they could also support the improvement of teaching in general across a school or district (Sobel, 2005, p. 53). While the development of ecological innovation centers would require its own expression of imaginative diligence, open-hearted connection, and deliberate spontaneity, my experience in this field suggests to me that it could be a game changer with regards to nurturing ecological artistry and integrity in particular and teacher creativity in general.

David Orr (2004) recommends similar "centers for ecological arts design" to be formed on university campuses with the aim of "fostering ecological design intelligence" (p. 110) within higher education, which I also believe would improve not only ecological place-based education, but also education in general. Universities are the places in which most, if not all, teachers are prepared. Most universities, despite a growing amount of lip-service to terms like sustainability (Jones, 2013) and the impressive integration of innovations like green roofs, solar panels, and local food sourcing, still have not prioritized the integration of ecological approaches or sustainability frameworks to guide teaching and learning in higher education towards place and ecological literacy. Orr (2004) proposes a new means of evaluating and ranking universities which includes asking questions such as "Does the curriculum provide the essential tools for ecological literacy?" (p. 91) and "Does four years at a particular institution instill knowledge, love, and competence toward the natural world or indifference or ignorance? (p. 90). This, Orr admits, "presumes…that the faculty itself is ecologically literate" which may actually be a false presumption (2004, p. 91; Reynolds, Brondizio & Robinson, 2010; Sterling, 2001). As Gruenewald (2005) notes, bringing place-based education into university teacher training programs would require creativity and innovation, and the ability to look for "small openings" where place-based education could take root among the more established subjects and approaches. That said, with a creative attitude and a bit of deliberate spontaneity and imaginative diligence, it is possible to envision many small openings in which to plant the seeds of ecoPBE into teacher training programs in particular and higher education in general.

Lesson four: celebrating the harvest. At the end of the growing season, the time comes for one last harvest before the season ends. This means picking the final tomatoes and herbs, canning sauce, and collecting and saving seeds for future planting before mulching and composting and putting the land to rest for a while. It also is often a time of celebration of bounty and hard work. No matter how large or small the harvest, be it a single handful of potatoes or enough tubers to start next year's planting, it is important to take the time at the end of the growing season to show love and appreciation for the land, the harvest, and the people whose passion and labor made it possible. This is the moment when the ecological artistry of the gardener is acknowledged, where the integrity of the community is honored.

Barriers of love. Love is often an overlooked element of education, although it is ultimately at the heart of most teachers' work. At Desert School, Mr. Kit, Ms. Tanya, Ms. Liz and I all demonstrated love - for our students, our colleagues, our content, and our world – through our unique expression of ecological artistry and our commitment to ecological integrity. Mr. Kit spoke of wanting to create a home for his students, Ms.

Tanya showed love for other living things in her care for adopted pets, and Ms. Liz shaped her teaching around the desire to “find links everywhere.” Without intending to overstate my role, every single decision I made at Desert School was guided by what environmental activist and scholar Joanna Macy calls a “wild love for the world” and intention to inspire the same in others (Tippett, 2010). Love is what kept us in the game, despite the many rules, standards, norms, and structures that shaped our life and work at Desert School and at times made our work exceedingly or unnecessarily difficult. Love is what drove our curiosity and desire to improve our skills and knowledge, and yet we barely ever celebrated the role of love in our effort to do ecological place-based education.

Orr suggests that the “loudest objection” to the discussion of “the issue of love in relation to science and education” comes from the “academic equivalent of the fundamentalist, who will argue that science works inversely to passion” (2004, p. 44). Orr notes that the academic fundamentalist is the individual – or group of individuals – who has become mired in place by misconceptions related to the nature of rigor and science. This fundamentalist belief drove us at Desert School to celebrate not our burgeoning love for the planet and one another inspired by ecoPBE, but our improvements in maths scores, success in local sports competitions, school inspection rankings, and the hours spent in the gardens and ecodomes; these are ultimately things that are easier to measure and which we are more comfortable talking about. And yet it is not just the seeking of these measurable results that drives most of us into education, particularly of a certain kind like ecoPBE. Orr encourages us to realize that most of us came into our roles as educators and environmentalists “because of an early, deep, and vivid resonance between the natural world and ourselves” (p. 45).

For many of us, our work is driven by personal emotions, beliefs, and experiences that are rarely recognized, despite their contribution to our expressions of artistry, and “we need to be more candid with ourselves and our students” about these feelings and experiences (Orr, 2004, p. 46). Our artistry is similarly guided by our understanding of not only our content and pedagogy, but our person. Connelly and Clandinin (1991) suggest that the improvement of education will follow on the heels of the recognition of personal practical knowledge, that “particular way of reconstructing the past and the intentions for the future to deal with the exigencies of a present situation” that “allows us to talk about teachers as knowledgeable and knowing persons” (p. 25). It requires teachers to examine and honor their personal beliefs and experiences as the forces that shape their curricular design and pedagogical practice. Within this study, it was necessary for me to first understand the intentions and expectations of the teachers, as well as to find out more about their path to Desert School, in order to fully recognize their unique expressions of ecological artistry. Through this research, as well as my work with the teachers at Desert School, I came to care for them and their work even more deeply, and to see beauty in the integrity and effort they put into bringing this ecological school to life. The expressions of ecological artistry and integrity described in our intentions and practices, was in many ways offered as a celebration of the bountiful and beautiful harvest of the first year of Desert School. For myself, I had to reconstruct reality through the help of magical realism, and of course Lalo, in order to return to my initial love and care for the people and places of Desert School. This helped me remember my intentions of creating a loving community of ecological educators despite the way my time at Desert School ended, encouraging me to celebrate my own artistry as an ecological educator and educational researcher. Only by returning to love was I able to find a “willingness to talk about important things” that were experienced and learned from our time together at Desert School and offer up ideas for the improvement of ecological place-based education. “Personal motives matter,” writes David Orr, “and different motives lead to very different kinds of knowledge and very different ecological results” (2004, p. 46).

Openings for love. And so I offer one last implication suggested by the findings for the improvement of ecological education in particular and education in general, and that is this: that we do not shy away from developing the “heart” in education, which is so intimately connected to the development of intellect and skills, especially as they relate to ecological artistry and integrity. Moroye, in offering suggestions for the improvement of ecological education guided by her earliest findings surrounding ecological mindedness, suggested that we invest greater time and focus on “cultivating ecological beliefs” and an ethic of care in pre-service teacher programs (2007, p. 245). Hammerness insists that recognizing and honoring teacher’s personal visions can support school reform and the improvement of education towards particular aims (2001, 2004). Similarly, in order to improve ecological place-based education, I suggest that encouraging teachers to harvest and celebrate their experiences, to nurture their passions and share their intentions for the people, place, and their profession as educators. Practices that help teachers remember or even create new “fascinations, imaginative happenings, associations, inspirations, and sensory experiences” (Orr, 2004, p. 45) may move them to explore and imagine new ways of doing ecological place-based education in particular, and even rethink their approach to education in general. For example, before leaving Desert School, I created a set of questions and experiences intended to be integrated into new teacher on-boarding and on-going professional development that encouraged teachers to express a bit of their own personal genius and artistry through questions such as: Why were you drawn to Desert School? What role did nature have in your childhood? Where do you find beauty in Desert City? and What is your favorite way explore nature on campus? The experiences included activities such as findings a “sit spot” and creating a “small world” on campus that they could return to again and again (Demarest, 2015; Sobel, 2008), a community scavenger hunt that introduced teachers to the numerous, and often overlooked, local ecosystems and experts, and inquiry-based sensory mapping of local spaces to help them engage with the world with their whole body, as many children do. Unfortunately, I did not see the beginning of the new school year, and I do not know if any of these ideas were implemented, but I believe the creation and implementation of these sorts of ideas into teacher preparation courses and professional development would help educators bring love and celebration – for ourselves, one another, and the world around us – to its rightful place, at the heart of education.

Further Research

The implications and themes that emerged from the findings of this study are important to consider in the improvement of ecological place-based education. In this time of increasing environmental, political, and economic disruption in which rules are ever more lacking (Eisner, 2002a), turning our attention to the artistry of teaching in ecological place-based education may be of interest to educators and those interested in the improvement of education. However, as I have said from the very beginning, there is always more work to be done with regards to research and inquiry surrounding ecological place-based teaching and the artistry of education and educational research.

For example, it may be interesting to explore the ecological artistry of experienced ecological place-based educators, to see if artistry and creativity are expressed through similar themes of imaginative diligence, open-hearted connection, and deliberate spontaneity, of if additional or alternative expressions of artistry emerge. It might be interesting to pair this inquiry into artistry with a focused look at the structures – the roles, systems, and spaces, for example – that enhance or diminish ecological integrity and nourish ecological artistry at particularly successful and long-standing ecological place-based schools, such as Green School Bali or the School for Environmental Studies in Minnesota. Along this vein, it may also be interesting to look at the expressions of ecological artistry found within teachers of different cultural and ethnic backgrounds, such as indigenous educators, or in different settings, such as rural schools versus the urban setting of Desert School.

Further research surrounding teacher preparation for ecological place-based education may benefit from the application of ecological artistry as an evaluative lens for teacher educators and researchers interested in examining their own artistry, as well as to inquire into the opportunities for the growth and expression of ecological artistry for teachers in training throughout their course in a program. In what ways are they emphasizing the accumulation of scientific ecological knowledge? In what ways are the emphasizing the development of creative ecological artistry?

Finally, I think it might be interesting to continue to consider the role of arts-based research in general, and magical realism in particular, in exploring and communicating about the "intellect, hands, and heart" of ecological place-based education for people inside and outside of the field for the improvement of ecological place-based education (Orr, 1992). How might offering lessons and stories of ecological place-based education through alternative forms of representation help others understand and integrate ecological beliefs and practices into their own teaching? How can an arts-based approach to ecological place-based education help us better draw out the heart-felt emotions that inform and encourage this particular kind of education (Orr, 2004), the one that just may save us?

Closing Statement: The Snail Returns Home

When I finally returned home after this long and difficult journey, it was once again winter in the United States. Just like the day I set off on this adventure, the sky was gray and threatening snow. Back in the place that is more my home than anywhere else, the Great Lake stretched out far and wide in front of me, seeming to fall away at the edges of the earth. This particular winter, one of the warmest on record, not a single layer of ice formed over the water, and the waves pounded the shore fiercely and relentlessly as seasonal winds whipped down from the arctic and across the lake. Without the protection typically afforded by shelf ice, the waves devoured our beaches, bit by bit, until trees tumbled into the water and break walls collapsed. Structures long ago buried under sand were revealed by the scouring, only to be smashed and carried away by the next big swell.

The irony was not lost on me. I had spent the last two years in a foreign land navigating the shifting sands of ecological place-based education and building a place where ecological artistry could emerge from within a diverse, thriving and resilient community, only to see my vision buried in a single day by a particularly ferocious storm. Upon returning home, seeking to find meaning, clarity, and relief in a more familiar land, I was confronted with the reality that this place that I know and love more than any other – this land that raised me right alongside my parents – was literally collapsing in front of my eyes, a little bit every day, a result of human activity and climate change. Several homes have already been lost to the water, and the road that at first only required traffic to slow, is now blocked indefinitely where the beach has eroded away beneath the asphalt.

The conversations have started as to how to remedy the problem, and too often they are stilted and accusatory between the haves and the have nots, between the public and the private organizations. Many seem to be completely missing the fact that this destruction is directly connected to the larger issue of climate disruption, but – the conversations are happening, nonetheless. A complete collapse of the road is likely, hence the barriers and street closures, although it seems no one knows when it will happen or how much destruction it could cause. Perhaps it will only be a slow disintegration, still years in the making, or maybe a crack will break open wide during a springtime deluge. I, like the rest of the inhabitants of this area who love and have been shaped by this place, hope that neither of these things happen, that somehow, we find a fix – for the beach, the road, the world. It is this optimism, our *love* and *hope* for this place and its future, that drive me forward in my work as a scientist and an artist, as an educator and a researcher hoping to address the issues of climate change and ecological disruption through ecological place-based education. “Tell me, what is it you plan to do with your one wild and precious life?” Mary Oliver inquires of each of us. In response I say: I intend to keep exploring this beautiful world, in search of places to create new worlds and imagine new ways of being, for the improvement of education for all. I will move forward with my eyes open wide and my ears tuned to the heartbeat of the earth, moving confidently and courageously across shifting sands.

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APPENDIX A

INITIAL INTERVIEW QUESTIONS

Each interview begins with with questions such as:

- Tell me a little bit about your path to where we are today, at Desert School.
- How would you describe yourself as a teacher? What are your favorite parts of the school day?
- Do you have a particular passion for a certain subject, topic, or style of teaching?
- Tell me more…

Semi-structured Interview Questions

I hope to learn a bit more about the role you are in at Desert School. These next questions ask you to reflect on your expectations in this new role at an ecological school.

1. In your own words, describe how you have interpreted the mission of Desert School.
2. Do you remember why you decided to apply, and then join, Desert School? Was this in anyway related to the mission?
3. Before joining the school, what did you imagine Desert School would be like?
4. What role would you say you have in carrying out this mission?
5. What in this mission is familiar to you? What is exciting about it? Is there anything that is daunting or challenging to you?
6. How do you see your own professional skills and passions influencing your work at Desert School? How do you see the mission of Desert School influencing your professional practice?

The next few questions dive into the curriculum and teaching a bit.

1. Describe an experience you have had with project-based learning (*this is the context within which place-based education is couched for many of the teachers).* How did location, or place, impact this project, if at all?
2. What does ecological education mean to you? Do you see yourself as an ecological educator? In what ways are you an ecological educator?
3. What has your experience been like so far implementing education through an ecological lens in your classroom?
4. Describe a meaningful teaching moment that has happened so far this year. What were you doing? What role did you play?
5. What do you hope students took away from this experience? What ecological literacy (*a term they are familiar with)* strands and practices were embedded?
6. We've discussed the phrase "all education is environmental education" several times. What does this statement mean to you? How does that come to life in your classroom? For your students?

Is there anything else you'd like to add?
Can you elaborate on....

APPENDIX B

FINAL INTERVIEW QUESTIONS

I used a personalized semi-structured final interview schedule for each teacher participant. The overall structure is the same for each teacher, but there are personalized questions for each of them.

Mr. Kit – did not conduct, as participant expressed a lack of time.

General Information and clarifying details

1. How long, total, have you been teaching? Where did you work abroad before? In what role?
2. What did you study in school? Did you plan to become a teacher from the beginning?
3. How would you describe your planning process this year?
    a. What thoughts and emotions do you experience when planning/implementing a project?
    b. For example, can you describe for me a bit about the process of creating the field trip to the Jamila Art and Green Wall? How did you find out about it? What planning went into this? How did you prepare the students for this trip?
4. If you were to create a self-portrait as an ecological educator, what would it look like?
    a. If you actually did this and you still have it, can you share a copy with me?
    b. What different hats do you wear this year? Can you describe one of them for me?
5. How would you describe your journey as an ecological and project-based educator?
    a. Are there any useful metaphors to apply?
    b. What have been some of the greatest obstacles and successes along the way?
6. If I was a fly on the wall of your room this year, what would be similar to last year? What would be different? Where would you be standing? What would you be doing? What would I see? What else might be happening?

Educator Sense of Place – we teach who we are

7. What do you think of when you think of home?
8. Where do you find home in Desert City? What/where is your favorite place in Desert City? How does this compare to your favorite place in your home country?
9. How much thought or deliberation went into moving here?

Reflection and follow up on last year.

10. Reflecting on last year, what project were you most excited by in the first year of Arbor? Why? Will you be teaching this project again this year? How will it look different, if at all?
11. What was your favorite trip that you took with children? Why? What was the purpose of the trip? Why did you choose to go here, specifically? Where are you planning to go this year?
12. Last year you spoke about loving to teach music and PE especially, but noted that you didn't get to teach them anymore. What do you like about music teaching and PE? Have you gotten to do any more of that this year?

Reflecting on this year

13. How would you describe the mission of Desert School this year?
    a. Is this similar to or different from the first year of the school?
    b. What is your role like this year in carrying out this mission?
    c. What still excites you about your work at the school?
    d. If you were to write your own personal mission as an educator at this school, now in its second year, what would it be?
14. Several times last year you expressed a desire to speak openly about the identity or mission of the school, to clarify this as a whole community. Do you feel that this has happened? How does this impact your experiences at Arbor School?
15. What are the main focuses or priorities of this year?
    e. Are they clearly articulated? Are these different from last year?
    f. Has ecoliteracy CPD been prioritized this year? How so?
    g. How are you impacted or influenced by these priorities?
16. How has your experience with ecological place-based education been similar to/different the first year?
    h. What does a typical day for you look like this year?
    i. Have any particular changes been implemented in planning and teaching this year?

In closing

17. How do you feel about yourself as an ecological educator this year?
    j. Have you had any opportunities to deepen your own ecological knowledge?
    k. How has this happened? If not, why do you think it hasn't happened?
    l. What do you do differently?
18. What do you believe are some of the greatest barriers or blockers teachers might face when doing this sort of education? Why do you say that?

Ms. Tanya

General Information – clarifying details

1. Total number of years teaching?
2. What did you study in school? Did you plan to become a teacher from the beginning?
3. What does your planning process look like this year?
    a. What thoughts and emotions do you experience when planning/implementing a project?
    b. Do you feel like you made any specific changes to you approach to planning and teaching throughout the year? Can you describe some of those to me? How did these changes come about?
4. If you were to create a self-portrait as an ecological educator, what would it look like?
    a. If you actually did this and you still have it, can you share a copy with me?
    b. What different hats do you wear this year? Can you describe one of them for me?
5. How would you describe your journey as an ecological and project-based educator?
    a. Are there any useful metaphors to apply?

   b. What have been some of the greatest obstacles and successes along the way?
6. If I was a fly on the wall of your room this year, what would be similar to last year? What would be different? Where would you be standing? What would you be doing? What would I see? What else might be happening?
7. Often you say “it’s all about the kids”

Educator Sense of Place – we teach who we are

8. What do you think of when you think of home?
9. Where do you find home in Desert City? What/where is your favorite place in Desert City? How does this compare to your favorite place in your home country?
10. How much thought or deliberation went into moving here?
11. How do you incorporate “this place” into your teaching this year?

Reflection and follow up on last year.

1. Reflecting on last year, what project were you most excited by in the first year of Arbor? Why? Will you be teaching this project again this year? How will it look different, if at all?
2. What was your favorite trip that you took with children? Why? What was the purpose of the trip? Why did you choose to go here, specifically?
3. Can you describe for me a bit about the process of preparing for the talk with the adventurer last year? What planning went into this? How did you prepare the students for this experience?

Reflecting on this year

2. How would you describe the mission of Desert School this year?
   a. Is this similar to or different from the first year of the school?
   b. What is your role like this year in carrying out this mission?
   c. What still excites you about your work at the school?
   d. If you were to write your own personal mission as an educator at this school, now in its second year, what would it be?
3. What are the main focuses or priorities of this year?
   a. Are they clearly articulated? Are these different from last year?
   b. Has ecoliteracy CPD been prioritized this year? How so?
   c. Do you, personally, feel supported in your effort to “do ecoPBL?” If so, how?
4. How has your experience with ecological place-based education been similar to/different the first year?
   a. What does a typical day for you look like this year?
   b. Have any particular changes been implemented in planning and teaching this year?

In closing

5. How do you feel about yourself as an ecological educator this year?
   a. Have you had any opportunities to deepen your own ecological knowledge?
   b. How has this happened? If not, why do you think it hasn’t happened?
   c. What do you do differently?

6. What do you believe are some of the greatest barriers or blockers teachers might face when doing this sort of education? Why do you say that?

Ms. Liz

General Information – getting to know your details better

1. Total number of years teaching?
2. What did you study in school? Did you plan to become a teacher from the beginning?
3. What does your planning process look like this year?
    a. What thoughts and emotions do you experience when planning/implementing a project?
4. If you were to create a self-portrait as an ecological educator, what would it look like?
    a. If you actually did this and you still have it, can you share a copy with me?
    b. What different hats do you wear this year? Can you describe one of them for me?
5. How would you describe your journey as an ecological and project-based educator?
    a. Are there any useful metaphors to apply?
    b. What have been some of the greatest obstacles and successes along the way?
6. If I was a fly on the wall of your room this year, what would be similar to last year? What would be different? Where would you be standing? What would you be doing? What would I see? What else might be happening?
7. You spoke often of your dad and his work as an influence on your environmental awareness. Is he an influence on your teaching? Who or what else inspires you when you are teaching?

Educator Sense of Place – we teach who we are

8. What do you think of when you think of home?
9. Where do you find home in Desert City? What/where is your favorite place in Desert City? How does this compare to your favorite place in your home country?
10. How much thought or deliberation went into moving here?

Reflection and follow up on last year.

4. Reflecting on last year, what project were you most excited by in the first year of Arbor? Why? Will you be teaching this project again this year? How will it look different, if at all?
5. What was your favorite trip that you took with children? Why? What was the purpose of the trip? Why did you choose to go here, specifically?
6. You often talk about making connections or helping your kids make connections. Why is this important to you? Do you have a story from this year so far that was about making connections that you can share?
7. Why it is important to you that Ss learn independence?
8. Have you gotten any more of the autonomy you wished for last year?
9. Last year you expressed concern that projects didn't really connect much to "this place" – Desert City, the campus, or Country. Are projects this year any better integrated than last year?

10. Last year there was a lot of conversation – and you mentioned it several times – that you thought there would be more outdoor space for EYFS to use.
    a. Has this been resolved in any way?
    b. How does this impact your teaching and planning?
    c. How are you using the green spaces this year?
    d. Is this different than last year? In what way? What is your experience like?

Reflecting on this year

7. How would you describe the mission of Desert School this year?
    a. Is this similar to or different from the first year of the school?
    b. What is your role like this year in carrying out this mission?
    c. What still excites you about your work at the school?
    d. If you were to write your own personal mission as an educator at this school, now in its second year, what would it be?
8. What are the main focuses or priorities of this year?
    a. Are they clearly articulated? Are these different from last year?
    b. Has ecoliteracy CPD been prioritized this year? How so?
    c. Do you, personally, feel supported in your effort to "do ecoPBL?" If so, how?
9. How has your experience with ecological place-based education been similar to/different the first year?
    a. What does a typical day for you look like this year?
    b. Have any particular changes been implemented in planning and teaching this year?
10. Have you had opportunities to share your skills, knowledge and enthusiasm for ecological education with others this year?
    a. If so, what are some of the things you have done. If not, why not?

In closing

11. How do you feel about yourself as an ecological educator this year?
    a. Have you had any opportunities to deepen your own ecological knowledge?
    b. How has this happened? If not, why do you think it hasn't happened?
    c. What do you do differently?
12. What do you believe are some of the greatest barriers or blockers teachers might face when doing this sort of education? Why do you say that?

APPENDIX C

OTHERS OF SIMILARITY
INTERVIEW QUESTIONS

Time Needed: 60 minutes
A face-to-face (in-person or digital), one-on-one interview.

Just a few to get us started….

1. Tell me a little bit about your school… In your own words, describe the mission of your school.
2. Before joining the school, what did you imagine your school would be like? How does this compare to the reality?
3. Tell me a little bit about your path to where you are today at Your School. Do you remember why you decided to join your current school? Was this in anyway related to the mission?
4. What role would you say you have in carrying out this mission?

Semi-structured Interview Questions

I hope to learn a bit more about the role you are in at your school. These next questions ask you to reflect on your expectations in this new role at an ecological school.

5. How would you describe yourself as an educator? Do you have a particular passion for a certain subject, topic, or style of teaching? Tell me more…
6. How would you describe your role at your school? Who do you work with? How do you spend your time? Is this how you think your time should be spent?
7. Do you have a personal mission as an educator? What is it? Why do you do what you do?
8. How do you see your own professional skills, passion and mission influencing your work? How do are you influenced by your work?
9. How is your time divided between students and teachers? What is it like working with the teachers, if you do? What are some of the greatest successes you have had with getting other teachers involved? What are some of the greatest barriers?

The next few questions dive into the curriculum and teaching a bit.

10. Do you see yourself as an ecological or sustainability educator? What does sustainability education mean to you? What does it mean to "do" sustainability education?
11. Describe a particularly meaningful experience you have had with ecological or sustainability-based education in your current role. How did location, or place, impact this project, if at all? What were you doing? What role did you play?
12. What do you want students to take away from this experience?
13. What are some of the key words or phrases you would use to describe your experience so far implementing education through an ecological/sustainable lens in your role?
14. Describe your process of planning – do you work alone, collaboratively, do you write it all out, jot down notes? Paint me a picture with words of you in prep mode.
15. Help me imagine what it might be like to be a fly on the wall of your classroom: what are you doing? Where are you in the classroom? What are you saying? How are you moving? What is happening around you? What can I see around the room?

16. There is a phrase by David Orr in which he says “All education is environmental education” several times. What does this statement mean to you? How does that come to life in your classroom? For your students?

I am interested in exploring a bit about the community dynamics you experience.

17. Where do you find support for your work? Are there specific people you rely on? Websites or organizations you couldn’t do without?
18. What are your interactions like with other people you work with? How do you think others at your school would describe you? What do you think about that?
19. Can you describe some of the greatest obstacles you have faced in this role? Choose one that you have overcome – how did this happen? Which ones still exist? Why do you think these are harder to overcome?
20. When you reflect on your experiences within this field – however you liked to call it (EE, EfS, Ecological Education…) what do you think could have the biggest impact on ecological education around the world? Where do you think our focus could be as we move forward to bring sustainability education to more schools in this critical time?

Last but not least…is there anything else you’d like to share with me?

Follow Up Questions

1. Tell me more about…
2. Can you provide an example of...
3. Would you elaborate about…

APPENDIX D

SAMPLE OF DESERT SCHOOL ECOLITERACY FRAMEWORK

SAMPLE OF DESERT SCHOOL ECOLITERACY FRAMEWORK

This document is an example excerpted from the Desert School ecoliteracy framework. This version was one of the earliest; the framework was critiqued and amended throughout the school year. In the first year, the framework provided ecoliteracy criteria for Early Years through Year 6. Selections from the Early Years and Year Three and Four are provided here for reference; this is only a selection from each section in the original document.

Educating for Ecological Literacy, Sustainability and Environmental Justice

Our aim is to nurture children who are ecoliterate: compassionate, creative, curious, and courageous when it comes to interacting with one another and addressing the ecological issues of our modern world. Children who are ecoliterate learn not only to read the world, but also to integrate this knowledge of place and interaction with nature guides our thoughts, actions and words to create a more beautiful, sustainable and just society. A student who is ecologically literate spends time outside, playing and exploring with a sense of wonder; understands and recognizes nature as a teacher and place to learn; has a deep and caring connection to the COUNTRY and SCHOOL community; uses their imagination and unique intelligence to solve local and global environmental problems.

Ecoliteracy Strands	**Ecological Knowledge and Understanding**	**Sense of place**	**Wonder and Curiosity**	**Mindfulness and Empathy**	**Environmental Justice and Stewardship**
Action Words	*To know and understand*	*To connect and explore*	*To play and inquire*	*To observe and imagine*	*To act and engage*
Big Ideas	Local and global knowledge that supports ecological literacy; Ecological concepts; scientific thinking	Getting outside; connecting with others; exploring the genius of place; living well where we are	Using the five senses; creativity and imagination; structured and unstructured play; noticing details; asking specific questions;	Developing mindfulness tools; resiliency and awareness of self and others; compassion; asking big questions	Observing; assessing; listening; discussing; deciding; planning; acting; reflecting
EYFS Describing	• I describe my home, the place I live and go to school, and the people and critters in it. • I sort natural objects into groups.	• I share stories about my home and school. • I name some of the people and traditions of this place. • I describe some local plants and animals.	• I play outdoors (and) with natural objects. • I describe what I notice using my senses.	• I take care of myself, physically. • I ask for help when I need it. • I sit quietly for short periods of time.	• I can name good and bad things about our local community. • I suggest ideas for how to fix problems.
KS2 Y3 and Y4 Exploring	• I can diagram and discuss natural cycles (eg. the water cycle, rock and soil cycle). • I can create models of (eco)systems sustainable (eg. diverse, resilient, fair, healthy). • I construct food webs based on local and global ecosystems (eg I illustrate our local food webs and describe how human and non-human elements impact them.)	• I identify local plants and discuss their adaptations. • I give examples connecting the local seasons, weather, climate, geography and geology to the local cultures and traditions • I can discuss how humans have shaped the local landscape.	• I ask relevant and unique questions. • I experiment to answer them. • I regularly use my senses to observe, record, and make predictions about things, new and familiar. • I use my imagination while playing and in my academic work.	• I use mindfulness tools when I need to refocus, often on my own. • I take care of the environment and people around me. • I can explain how my words and actions impact others. • I can sit or move quietly in nature.	• I identify and list a variety of strengths and issues of my local community. • I discuss possible causes and effects of these strengths and issues. • I work with peers and adults to design creative and realistic solutions to aspects of these issues.

APPENDIX E

INSTITUTIONAL REVIEW BOARD APPROVAL LETTER

UNIVERSITY OF
NORTHERN COLORADO

Institutional Review Board

DATE:	December 21, 2018
TO:	Emily Bretl
FROM:	University of Northern Colorado (UNCO) IRB
PROJECT TITLE:	[1352664-2] Shifting Sands: The Art of Ecological Place-based Education
SUBMISSION TYPE:	Amendment/Modification
ACTION:	APPROVAL/VERIFICATION OF EXEMPT STATUS
DECISION DATE:	December 21, 2018
EXPIRATION DATE:	December 21, 2022

Thank you for your submission of Amendment/Modification materials for this project. The University of Northern Colorado (UNCO) IRB approves this project and verifies its status as EXEMPT according to federal IRB regulations.

We will retain a copy of this correspondence within our records for a duration of 4 years. If you have any questions, please contact Nicole Morse at 970-351-1910 or nicole.morse@unco.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within University of Northern Colorado (UNCO) IRB's records.

APPENDIX F

INSTITUTIONAL REVIEW BOARD AMMENDEMENT APPROVAL LETTER

UNIVERSITY OF
NORTHERN COLORADO

Institutional Review Board

DATE: December 21, 2018

TO: Emily Bretl
FROM: University of Northern Colorado (UNCO) IRB

PROJECT TITLE: [1352664-2] Shifting Sands: The Art of Ecological Place-based Education
SUBMISSION TYPE: Amendment/Modification

ACTION: APPROVAL/VERIFICATION OF EXEMPT STATUS
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