RE-CONNECTING WITH NATURE:
TRANSFORMATIVE
ENVIRONMENTAL EDUCATION THROUGH THE ARTS

by

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Abstract

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Environmental educators are seeking ways to make learning relevant in an environment in which students are increasingly disconnected from the natural world and the places where they live, and more connected to digital media and technology. By examining different worldviews, educational paradigms, the role of arts in learning, and the use of media and technologies, in light of childhood identity development, this thesis explores how a connection to nature can develop through experiences with the arts.

This is largely a theoretical study that contextualizes Environmental Education within a framework of the arts and the use of media and technologies for advancing learning. The resources used in it include environmental educators, theorists, philosophers, and arts educators. I examine how an integrated curriculum for Environmental Education, using the arts, can provide opportunities for students of all ages to re-imagine in more biocentric and cosmocentric terms the world and their place in it. I argue that an integrative arts approach can help educators, students and communities establish a holistic and humane Environmental Education curriculum that is transformative. Guided by Thomas Berry’s influential cosmological vision and David Orr’s environmental education work, this study examines how the arts may re-direct our thinking and learning and help us to re-imagine our connections to the biotic communities of which we are a
constituent part. The arts are also examined as a means for respecting and appreciating the natural world and other animal species. I argue that the practice of nurturing environmental sensitivity, inquiry, creativity, imagination, and play through the arts can engage students in a co-creative dialogue with nature and culture, which can help them build ecological identities. It can also direct older students toward a more responsible and critical view of technology and media.
ACKNOWLEDGEMENTS

I dedicate this work to my three children, Jackson, Kathryn, and Annabett. I hope that you can always embrace the wonder, beauty, and joy of this world and see it reflected in your own lives. May you create and find connection and compassion, love and laughter, wherever life takes you.

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‘Our Story’

The white moon says tell them my story
The gray owl says tell them my story
The red frog says tell them mine
White crane, green grass, blue whale
Falling stars, gathering storms, an exaltation of larks
We are moving into this new story
Separate and yet whole

We stopped along the stages of time
To imagine, to dream, to ask the questions
But there are no answers
A wild fire rages through this forest
And we are the only animal to turn
Mesmerized, drawn to the edge of heat
While the rivers run dry

But this is a love story
And it may burn bright and fall
The way of a lovers kiss, no more
Or we may come together, a happy ending
This story
The Earth’s story
The human story
Our story

Rachel York, Toronto, Ontario
CHAPTER I: THE EPISTEMIC CONTEXT OF THE STUDY

I. Introduction

From the soil to the water, from the life supporting ecosystems to the individual species that constitute the whole, we are all a part of the Earth community. Most people in the ancient world lived in hunting and agrarian societies and had intimate relationships with their local landscapes; but people today, who live primarily in urban, industrialized settings, tend to be cut off from nature (Berry, 1988). While people know that they are somehow connected to and dependent upon the natural world and its life systems, the majority still live apart from it, in terms of their daily routines and practices. This separation from nature, reflective of an anthropocentric worldview, and our subsequent actions over the past few centuries, such as industrialization and the extraction of natural resources, have had devastating effects on the life systems of Earth upon which human beings and all other animals depend. In recent decades it has become apparent that we are in the midst of an environmental crisis that threatens life on Earth (Clarke, 2012; Hansen, 2009; Orr, 2004).

Ecological degradation is affecting all life on Earth and life for future generations. From anthropocentric climate change (Hansen, 2009) and unmitigated detrimental environmental ‘externalities’ (e.g., waste, pollution, toxins) to finite resource depletion (Heinberg, 2007) and the mass extinction of species (Eldredge, 1995), many environmental problems are on the rise and are expected to greatly worsen this century, with catastrophic consequences, including predicted mass famines caused by drought, climate wars (over water), extensive coastal flooding and the creation of eco-refugees in tens of millions. Mounting scientific evidence demonstrates that a massive

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1 As we move further into the 21st century, it has become alarmingly apparent that most of the major life-sustaining ecosystems that make life on Earth possible for all species are at risk (Millennium Ecosystem Assessment, 2005).

2 Scientists have suggested that we are entering a new geological epoch called the Anthropocene; this era is distinct in that humans are not only affecting the climate and biological diversity of the planet but the geology of the Earth for millennia (Archer, 2009), and that as a result the Earth may not only be inhospitable in the coming years, but unbearable for those being born in the future (Hansen, 2009).
environmental crisis, caused by human industrial activity (namely, fossil fuel emissions) is well underway (Archer, 2009). The question arises: how can we mitigate or even alter our current trajectory and help restore the planet, and how do we address our “quality of being” (Sauve, 2009, p. 328) as a part of this biotic community?

Using an integrated approach to Environmental Education, we need to find ways to connect to what self-described ‘geologian’ (geology + theologian), environmental scholar, and cultural historian Thomas Berry (1988) has called “the Earth community.” Some environmental scholars and educators have articulated the urgent need for ecological awareness and maintain that a deeper connection to nature in needed to help address the environmental crisis and promote learning for the 21st century (Orr, 2004; Gruenewald & Smith, 2008; Palmer, 1997, 1998). The problem, as environmental scholar David Orr (2004) proposes, is not one in education, but of education. Modern education, on the whole, does not foster what biologist E. O. Wilson (1984) has termed biophilia (the love of nature) and biocentrism (a worldview that is Earth-centered rather than human-centered), or any ecological worldviews that are generally consistent with environmental sustainability. Modern education “fragments the world into bits and pieces called disciplines and sub-disciplines” and most people graduate from higher education without an “integrated sense of the unity of things” (Orr, 2004, p.11). There are specialists in particular fields, but many lack a worldview that integrates their particular knowledge into a larger whole. A biocentric worldview can do that, which is why Berry says that the educational system is one of the four main cultural institutions we need, as a society, in order to bring about a shift from anthropocentric to Earth-centered worldviews. The other three institutions are the government, corporations, and religion. In other words, we need to aim for integration and wholeness, and find connections and balance.

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3 For the purposes of this work I refer to the definition of ‘Sustainability” which entails “not being harmful of the environment” and supporting a natural balance, where ecosystems and their inherent diversity remain relatively stable (Retrieved from http://dictionary.reference.com/browse/sustainability).
As Orr (2004) relates in *Earth in Mind*, “all education is environmental education” (p.12), meaning that, either by inclusion or exclusion, students learn their role in the biotic community; they see their role as either to dominate and exploit the world around them, or alternatively, to live with it in greater harmony. Environmental Education is a part of the curriculum, and yet to date most educational systems and educators still teach it as a single and separate discipline, as if the natural world were something apart from the human condition, and as if human beings were not animals who exist within, and are entirely dependent upon the natural world. Although we are still learning, through biological sciences, climate economics, and other disciplines, how the survival of human societies is intimately tied to the fate of life on Earth, our relationship with the natural world is diminishing, due in part to the rise of technology and industrialization. Studies show that as our experiences with technologies and media multiply, our direct experiences with the natural world diminish (Alliance for Childhood, 2004; Orr, 2003, 2004; Louv, 2008, 2012). There is a direct correlation between the two, such that increased use of technology can rob students of direct experiences with the natural world. This is of great concern as student use of media and new technologies has grown exponentially in the last decade.

Educators are faced with the questions of how to make learning relevant in an environment where students are increasingly connected to virtual worlds and disconnected from the places where they live. Ironically, the new social media and technologies may help with this. Some environmental educators (Orr, 2004; O’Sullivan, 1999; Palmer, 1997, 1998; Thomashow, 1995) recognize the great challenge posed by trying to influence young people to adopt an Earth-centered worldview within a consumer culture where “roughly five hundred billion dollars” is spent annually on commercial advertising (Orr, 2004, p. xii). Environmental Education is not adequately teaching sustainability for future generations, or adequately addressing or providing a remedy for the feeling that most people have of separation and alienation from their natural environments (Berry, 1988; Orr, 2004; Sauve, 2009). This thesis, then, is an examination of the pedagogic role of
art in fostering a sensitivity and a connection to nature as well as how modern technologies may support this means for relating to the biotic community.

As an English and environmental educator for higher education, and a parent of young children, currently living in an urban area, I find students and my own children are more interested and connected to media and technologies than to the natural world. As a result, they distance themselves from outdoor and “natural” settings, and much of their social interaction is reduced to texting and emails. Moreover, the rise of personal computers and internet media can have negative environmental and psychological consequences such as e-waste, the spread of consumerism online, computer addiction, physical inactivity, and a noted inability of those who text frequently to have meaningful conversations in person (Turkle, 2012). However, while modern technologies have contributed greatly to social isolation and ecological disasters, media may arguably also represent a means of advancing Environmental Education.

The rise of user-generated Internet media has grown exponentially in the last few years as personal computers, cell phones, and portable technologies have become ubiquitous and allow for greater global connectivity. Technology is shaping the way people relate to one another as a virtual commons is created (Wesch, 2009). Current anthropological studies demonstrate that new media literacies are changing the way people learn together (Wesch, 2009) and re-wiring our brain patterns (Dakin, 2014). Consequently, the potential for teaching and engaging individuals in learning about their environments cannot be underestimated. The question of how useful these technologies and media can be in contributing to creativity and environmental learning has yet to be addressed adequately. Some scholars and educators are beginning to recognize the need to facilitate “co-learning” (where the student and teacher learn together) while navigating the media and technologies with students for critical thinking (Wesch, 2009). However, proponents of Environmental Education often dismiss media and technologies as antithetical to engaging with nature, in part because they are distractions, taking students away from time better spent in the
natural world. I will explore this issue throughout the thesis, and propose a synthesis of these antithetical views.

Although technology and nature are hard to reconcile, art and nature, generally speaking, are not. The patterns, inherent in living systems and nature as a whole, “require visualizing and mapping” which opens the door to the arts in the curriculum (Capra, 2005, p. 23). “Children have a natural ability to recognize and express patterns,” making the connection between art and environmental learning a direct one (Capra, 2005, p. 23). A number of art educators and educational scholars are attempting to integrate environmental learning across the curriculum (Orr, 2004; Palmer, 1995; Gablik, 1991), and recent educational research explores the role of visual and language arts in the transformative process of learning and ecological thinking (Kagan, 2011). Arts-based learning programs have been shown to connect with improved teaching and learning, providing sites for student imagination, interaction and play, all of which deepen individual understanding of complex issues and strengthen a sense of community (Fels & Belliveau, 2008). Visual and language arts are providing opportunities to re-imagine space, place, and a planetary consciousness (Gradle, 2007a). Art and language educators are recognizing the need for integrating environment into their curriculum, teaching and learning processes (Gablik, 1991).

Art and time in nature, as a creative experiential engagement, can go beyond being able to learn about plants, or paint, or write a story. They are meant to be transformative: learners are given opportunities to connect more deeply with the self and with others. According to art theorist and educational philosopher Maxine Greene (1995), an encounter with the arts can spark the imagination, challenge conformity to norms and worldviews that are taken for granted, and allow us to envision multiple ways of being in the world. This is particularly important at a time in history when an anthropocentric worldview dominates education and our cultural ways of being in the world. The integration of art and environment can enable students not only to reflect on their worldviews, but also to voice their questions, knowledge, feelings, and ideas in a meaningful way. It can also give learners the ability to attach new understandings to their everyday lived experiences
and realities and offer them tools with which to navigate a changing ecological landscape.

Although there has been an increased interest in integrating environment into art and language education, and in bringing learning inquiry outside, to increase play and imagination, Environmental Education is still primarily considered a single discipline in North American institutions, taught as an individual science (Palmer, 1997), and thought to be objective, impersonal, and non-value laden (Hungerford, 1975/2005).

The integration of Environmental Education into the arts is already challenging the way students see and relate to the natural world, providing them with opportunities to envision biocentric worldviews and create ecological identities (Gablik, 1991). An extensive study, conducted in 1998, analyzed the implications of Environment as an Integrating Context (EIC) for learning and found that students who participated in linking the language arts and environment were more involved in collaborative learning, developed an increased interest in their community, and earned a higher GPA than before the study (Lieberman & Hoody, 1998, p. 17). The integration of arts and environment in the secondary school curricula has been shown to provide opportunities for communication, critical thinking, and may help to establish an ethic of care in student participants. Students who participated were more apt to care for local natural environments (Lieberman & Hoody, 1998, p. 29), demonstrating an increased interest in the natural world. The integration of arts-based environmental learning with use of technologies and media is just now beginning to enter our cultural dialogue (Dewar & Campbell, 2004), but has yet to be explored in education and in the curriculum.

This thesis provides an overview of arts-based environmental learning. It is an attempt to invoke critical consideration of how the arts, with the use of media and technologies, may engage students in an imaginative process of experiencing and re-connecting to nature. I investigate the potential of using the arts, media and technologies for engendering an ethic of care for the natural world and engaging students in direct experiences with their environments and with one another. I also question if the integration of technologies and media is being overlooked as a potential tool for
teaching and learning environmental consciousness and sensitivity. While there has been a significant movement to integrate environmental learning with the arts (Gablik, 1991; Inwood, 2008), there is a lack of research demonstrating how the arts, coupled with media and technologies, may be useful in fostering an increased sensitivity and a connection with nature. At the same time, educators are beginning to consider ways in which education can help us, in a “co-creative dialogue” (Dewar & Campbell, 2004, p. 211), embrace nature and culture as we explore the intersection of nature and the media/tech experience, in what author Richard Louv (2012), in his work *The Nature Principle: Reconnecting with Life in a Virtual Age*, calls the “hybrid mind” (p. 5).

Technologies and media are ubiquitous in our culture and in the lives of our students; but, as I will explore in this thesis, they may, when used mindfully, become powerful tools in directing experiences and shaping an eco-identity.

This thesis examines how the arts may facilitate ecological mindfulness in students of different ages. It also addresses the interface between art as experience and the invitation for learners to become more reflective and more aware of their place in the nature of things. Accordingly, this thesis contributes to current scholarship in environmental and arts education and provides a contextualizing framework for this subject. A theoretical investigation of the integration of technology, media and the arts as experience (visual and language arts) for the purposes of Environmental Education is important insofar as it involves bringing about greater discourse and contributing pedagogically to curriculum, teaching and learning. It can also take note of how student perspectives, experiences, and worldviews are shaped by learning and culture. I argue that technology and media in the classroom and in our culture should involve an ecological awareness and environmental sensitivity and, in what follows, I present a theoretical framework to support this position.

Following the lead of Ursula Franklin (1990) who asserts in *The Real World of Technology* that we need to approach technology in the “context of nature and people” (p. 89), this study approaches how educators may guide young learners towards a critical use of media and
technologies for Environmental Education and, in the process, bridge the gap between culture and nature. What are the philosophical and pedagogical considerations for doing so, and how can the collective and creative experience of art and technology and media influence identity shaping and construct a closer relationship to nature?

II. The Need for Environmental Education

Environmental scholar David Orr (2004) emphasizes that our ability to heal the planet is possible with education, and yet in many ways educators and communities are failing in the task, mainly because they are not sure how to instill love, care, and respect for nature. Empathy for all living things, which is a vital practice of being ecologically literate (also known as ecoliteracy) (Goleman, Bennett, & Barlow, 2012), is not often taught in the general arts and science curriculum. Author and evolutionary biologist Stephen J. Gould (1991) writes: “We cannot win this battle to save species and environments without forging an emotional bond between ourselves and nature as well – for we will not fight to save what we do not love” (as cited in Orr, 2004, p. 43). Love, emotions, and intuition are not usually an acceptable part of the rational discourse in the sciences and discussions on current problems in education. However, as Gould (1991) notes, students need to bond emotionally with the world around them. Inspiring awe, mystery and a sense of our connection to nature has an impact on how we think, behave and interact with our surroundings. Part of the challenge comes from the fact that our identities and cultural references are predominantly media based and distanced from nature. Children are especially susceptible to the negative effects of media and drawn toward technologies without a critical awareness of their implications, often at the expense of an ecological identity.

Children spend long hours in front of screens (Kaiser Family Foundation, 2005, as cited in Louv, 2008), and young people are increasingly more comfortable engaging in virtual worlds than communicating with the natural world. For example, the World of Minecraft is a video game
phenomenon, which has created an addiction, enticing millions of young people to play the game for extended periods of time, thus robbing them of the psychological and physical benefits of embodied social interaction and interaction with the natural world and other animals. Educational and health experts warn that children have fewer and fewer opportunities for direct contact with nature (Alliance for Childhood, 2004; Louv, 2008, 2012) because of increased urbanization and curriculum demands, but also because of an imposed fear of the natural world, aggravated by media exposure and influences. Our natural predisposition, biophilia, can be socially conditioned to become biophobia. Freud (1927/2004), in *The Future of an Illusion*, theorized that human civilization is built, in part, on a fear and rejection of nature for the sake of collective survival, but this creates in us an inner conflict, an irresolvable neurosis. The fields of evolutionary psychology and eco-psychology have expanded greatly on these themes in recent years. The critique of technology, a whole field in itself, adds yet another complimentary layer of explanation to this thesis by exploring the negative psychological effects of over-dependence and addiction to technologies that are not necessary for survival, but are nonetheless increasingly ubiquitous in our society (Roszak, 2001), and seeing how such technologies, if directed, may be useful in guiding children to connect with nature.

Direct exposure to the natural world is essential for a child’s healthy emotional and psychological development (Louv, 2008, 2012). A separation from nature has been linked to a host of psychological and health problems, such as attention deficit disorder and obesity in children, and depression and anxiety in people of all ages (Louv, 2008, 2012). Conversely, research now demonstrates that those children who spend more time in nature reduce their chances of chronic illness later in life; they are less stressed and their mental acuity is augmented overall (Louv, 2012). The rich sensory experiences of direct connection with nature have been linked to increased creativity, awareness, wellness, environmental sensitivity, development of ecological

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4 *World of Minecraft* is a video game where users build worlds similar to lego constructions. See http://www.bbc.com/news/magazine-23572742
consciousness, a sense of awe and wonder about the natural world, and personal transformation (Matthiessen, 2007; Carson, 1956/1998; Kellert, 2002; Chiarotto, 2011; Louv, 2008, 2012). This sense of awe was identified by scholar of religion Rudolph Otto (1958) as “the numinous.” An exaltation of larks, a lightning storm, the full moon shining over Lake Ontario on a clear summer night are all examples of experiences that can evoke a feeling of the numinous. They are direct experiences that often fill the observer with a reverence for the natural world. It can be argued that children – and all human beings for that matter – need numinous experiences in order to be psychologically healthy, but their life experiences are increasingly reduced to virtual worlds programmed and controlled by people who do not care for their well-being, and who have created illusory worlds for the sake of financial gain – as the example of video games and commercial mass media illustrate.

While direct experiences with nature are instrumental in forging a connection to nature, it has been documented that vicarious and symbolic experiences with nature are important in developing a cognitive and emotional relationship with nature (Kellert, 2002). Child psychologist John Dewey (1900/1963) argued that children need to understand the mutual interdependency between the self and the natural world by engaging with it, and not simply observing and reducing nature to “a mass of meaningless details” (p. 141), as if it were an object outside of the self. If an ecologically sustainable world is dependent on our collective recognition that we are a part of what is euphemistically termed “the web of life” (e.g., the biosphere, in which all life is constantly interacting interdependently), then students need a variety of experiences to renew their engagement with nature (Clarke, 2012; Holzer, 2010; Louv, 2008, 2012; Orr, 2003, 2004; Heenley & Peavy, 2006). Education can and should play a central role in developing this awareness and engagement by guiding children to develop a physical and symbolic relationship to nature through such experiences and thereby helping them to become more caring and thoughtful citizens, involved in their communities and the world as a whole. There are now many psychological case studies (Louv, 2008, 2012, Clarke, 2012) that underscore this point. Those who plan educational
curricula need to acknowledge this, for the sake of the health and wellbeing of students whose
development is in their care. The main point is that Environmental Education is not merely ‘for the
environment’ (as though that were something outside of a student); it is for the health and
wellbeing of the students themselves.

III. Defining Nature

The definition of nature (what I have also referred to as ‘the natural world’) is an elusive
one, in part because the term is used so frequently and refers to so much. Its meanings are
multivalent. For the purposes of this dissertation, I am using the definition of nature proposed by
Dewey (1900/1963) who suggests that the natural environment includes people, natural objects,
and the forces and forms that surround them. He considered the environment to be “that in which
life is situated and through which it is circumstanced” (p.141), in support of making nature the
context of a child’s life and learning, as opposed to its being an object or subject. Dewey’s
consideration of nature, then, appears to be a holistic one, as opposed to the more dominant view of
nature in industrialized societies that views it instrumentally. Another good definition of nature is
what Louv (2012) calls “anywhere we experience meaningful kinship with other species,” to be
“found in the wilderness or in a city” (p. 52-53). Louv also finds that nature includes biodiversity
and abundance, wherever it is found. This is important for my study, as I consider both fauna and
flora a part of my working definition of nature, and would further distinguish between the two,
noting that nonhuman animals, who are frequently “flattened” or subsumed under the term ‘nature,’
are distinct and possess individuality (like human beings, who are also animals of a kind). Animals
thus represent a part of nature that has been historically meaningful to human beings, from the
earliest times, as noted by Professor of Religion Kimberley Patton (2006) in “‘Caught With
Ourselves in the Net of Life and Time:’ Traditional Views of Animals in Religion.” Their
reduction from that of living beings to objects intended for instrumental use, through the expansion
of industrial agriculture, damages us psychologically; it also leads to enormous ethical,
environmental, and health problems. A reconceiving of nature as a part of our everyday lives is important for Environmental Education and for the birth of an ecological mindset.

One of the defining characteristics of our modernity is that we often consider nature as something outside of ourselves. In the distant past and still today, among some aboriginal peoples and those who live a traditional pastoral or in subsistence economy, human beings have felt physically and spiritually connected to the land and to the rhythms of nature (Louv, 2012; Berry, 1988; Suzuki, 1997) and they have lived their lives accordingly. Recent research demonstrates that some children and youth believe that “nature” is something good but outside of our domain; it includes animals and plants, but not human beings (Mortari, 1997). In a 1997 study of children’s perceptions of nature, Luigiani Mortari noted that some of the participants included the stars and the planets in their drawings and maps in their descriptions of nature, but excluded humans. All of the participants felt that nature was made up of plants and animals, but only a few of the younger children (ages seven and eight) considered humans a part of nature, and the older students (ages ten and eleven) did so from a scientific perspective. Mortari’s study demonstrates a significant trend – namely that young people do not feel they are a part of nature.

Nature is often overlooked in the urban landscape and considered only outside of cities as something untouched (Jacobs, 1992; McClaren, 2009). Simultaneously, people have long considered themselves outside and above nature (Orr, 2004; Suzuki, 1997). Nature is a familiar and yet an immensely complex idea for all of us as we undergo a deep-seated ecological shift in our consciousness. Research (McClaren, 2009) shows that nature is largely absent from our urban rhetoric and curriculum, and scholars demonstrate that the words ‘nature’ and ‘sustainability’ have been used so frequently and in so many contexts that their meaning is often obscured (Capra, 2012; Soper, 1995). The phenomenon of ‘greenwash’ by corporations and governments – the disingenuous use of words like ‘green’ and ‘sustainable’ to describe inherently unsustainable extraction industries as part of public relations campaigns – illustrates how these terms lose their true meaning. Our cognitive representations of nature are directed by our deep-seated worldviews
that are, for the most part, anthropocentric, and these worldviews are largely shaped by inherited
cultural and religious views and norms. Social conditioning by cultural institutions that reify
inherited norms and values play an enormous role in the formation of worldviews.

As Berry (1988, 2000) notes, our cultures and traditions are predominantly
anthropocentric, viewing human beings as separate from and superior to the nonhuman world. For
most of the modern era, humans have placed themselves above nature and other animals, and this is
reflected in our ideologies, traditions, and in our graphic art. Animal-themed graphic art exists in
every culture, probably due to the dominance of animals on the planet for most of human history
and our co-evolution with them (since, as Darwin demonstrated, human beings are animals of a
kind (Rachels, 1987)). Yet modern representations of nonhuman animals frequently show them
subjugated, reduced, fetishized, and even anthropomorphized. Artistic representations of nonhuman
animals, and symbolic experiences with them, have grown exponentially and in correlation to their
gradual diminishment in our lives, which is one element in the overarching trend identified here:
the diminishment of nature in our lives over time, exacerbated by industrialization and technology.
Modern art can be distinguished from the more biocentric art of the Paleolithic Era, where
nonhuman animals were central in artistic representations and seemed to have been regarded with
reverence (Patton, 2006; Apostolos-Cappadona, 2006). The task of Environmental Education,
through the arts, is to reawaken that sense of wonder, awe, and appreciation for nature that we, as a
species, need to feel; for if it is missing, then the quality of our lives is greatly reduced. This is
especially true for children, who are often starved for contact with nature and animals and a sense
of community and turn instead (ironically) to the fantasy virtual worlds of video games to satisfy
those deeply embedded psychological needs.

Some environmental educators and theorists note that as we move away from this view of
nature and animals as something outside of ourselves and into a new consciousness, a story for
sustainability, we will begin to view nature as dynamic and adopt a narrative where human beings,
and animals, are equally a part of the web of life that sustains us (Berry, 1988; Mortari, 2007; Orr,
2004). During this birth of consciousness, it is relevant to note that the word ‘nature,’ in Latin
*natura*, literally means birth, and also refers to the phenomena of the physical world and life in
general (Harper, 2006). Nature is repository of rich sensory experiences that are essential for our
health and wellbeing but also for engaging children and stimulating their imaginations. Holistic
educator John Miller (2008) writes in the *Holistic Curriculum* that “nature at its core is interrelated
and dynamic” and “holistic education attempts to bring education into alignment with the
fundamental realities of nature” (p. 3).

Nature is proving to be not only good for our psychological and physical wellbeing but
also important for our cognitive and spiritual welfare. As E.O. Wilson (1992) hypothesized when
he coined the term “*biophilia,*” we need direct experiences with nature because of an “innate
emotional affiliation to . . . other living organisms” (p. 350). *Biophilia* and *biocentric* worldviews
need to become a conscious part of what we do and how we think and especially how “we educate
people to think in all fields” (Orr, 2004, p. 46). The adoption of such views reveals the
interconnectedness of the universe and our role in it. Sierra Club founder John Muir (1911/1988)
writes: “tug on anything at all and you’ll find it connected to everything else in the universe” (p.
110). It is critical that we know that what we do now, in every way, affects the future of billions of
sentient beings, as well as the countless trillions of non-sentient beings, who call this planet home.
There are roughly 8.7 million other animal species on the planet Earth at present (despite the
ongoing mass extinction of species). To act as though there is only one species that matters (*homo
sapiens sapiens*), and that the rest are here merely to be used for whatever purpose the dominant
species deems fit, can be regarded as the height of arrogance. Moving beyond an anthropocentric
worldview requires an acquired interest in and sensitivity towards nature and animals. If “an
ecologically sustainable world is predicated upon the interconnection of ourselves with the entire
web of life” (Holzer, 2010, as cited in Clarke, 2012, p. 6), how are we teaching and learning about
this connection? The dynamic and experiential pedagogical framework of holistic education and
environmental inquiry, as well as the related emerging field known as “compassionate education”
(or alternately “humane education”), may provide ways to explore this connection and help students develop an environmental sensitivity.

IV. Models for Sensitivity

This study considers the development of an environmental sensitivity, which can be defined as “a set of affective attributes which resulted in an individual viewing the environment from an empathetic perspective” (Hungerford & Peterson, 1982, as cited in Peterson, 2005, p. 296), as a starting point of interest in the environment. It addresses how art may develop an environmental sensitivity and may become a means to express such feelings, prior to any behavioral changes or the forming of ethical positions. Environmental scholar Nancy Peterson (2005) noted in her essay, “Environmental Sensitivity: A Review of Research,” that people who did not possess at least a low level of empathy for the natural environment (e.g., they were lacking sensitivity to it) were not able to meet other related goals in Environmental Education, such as stewardship or behavioral change. We may conclude from this that an emotional connection to the environment is an important first step in Environmental Education. Compassion, or what may be termed empathy for all life, is not often discussed in the traditional curriculum; the kind of compassionate Environmental Education, to which I am referring, endeavors to facilitate learning though being sensitive to others and to shared environments, including the nonhuman animals who inhabit them. This represents a major departure from the status quo, which is primarily anthropocentric and does not emphasize compassion and which, therefore, lacks the ability to help students fulfill their true potential as human beings (who are, of course, dependent on and part of the natural world, despite the illusion of separateness and human superiority that technological civilization fosters).
Environmental sensitivity begins with an awareness and knowledge of the natural world. The arts can evoke emotions and stir the imagination in unexpected ways and guide learners toward this kind of sensitivity and compassionate learning. Research has shown that art can be used as a metaphor to see the natural world in a variety of different ways, opening up multiple (and hitherto hidden) possibilities for connecting to nature and what could be called “shared representations” (through symbols and narratives) and for communicating new meanings and possibilities for presence in the world with other human beings. One study made use of photographs to examine this possibility for seeing nature in different and various ways (Lawrence & Cranton, 2009, as cited in Lawrence, 2012).

Most Environmental Education curricula lack the kind of creative integration that invokes environmental sensitivity and an awareness of how we are all connected (Orr, 2004, Henley & Peavy, 2006). However, such “skills and attitudes” are necessary to rebuild the Earth community, and to challenge the status quo of business-as-usual in schools and in society as a whole (Orr, 2004). Research shows that the bulk of Environmental Education research has focused on issues and knowledge, as opposed to environmental inquiry, responsibility and sensitivity (Volk & McBeth, 2005). Environmental Education requires an overt articulation of values, which is often missing when studies attempt to be value-neutral. Many students are not being taught to love the Earth’s biotic systems and inhabitants. Without values and love to inform them, and without a shift from anthropocentric to biocentric worldviews, they cannot adequately address environmental problems. While problem solving is important, it is rather like treating the illness and not the cause.

Environmental sensitivity means being empathetic to the natural world: it promotes inclusion, harmony, social justice, and a consideration of all life and, by extension, addresses environmental issues. It is part of a holistic model for humane Environmental Education. However, it is a practice that has been shown to be troublesome to educators because while they understand

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5 Environmental Sensitivity is distinguished here from the ‘environmental sensitivities’ also known as ES, or Environmental Illness (EI) where someone is impacted by food, chemicals, and molds, among other things.
its importance, they are unsure as to how to bring it into the curriculum (Volk, 2005). I am proposing that an arts-based approach may help solve that problem. Curriculum scholar Trudi Volk (2005) demonstrates that environmental sensitivity is more “prevalent among those who behave in environmental responsible ways than among those who do not” (p. 143). Therefore, we know that environmental sensitivity is an essential part of transformative Environmental Education and needs to be a part of the learning ecology.

I consider, in this study, how the arts and the use of technology and media, as tools, can facilitate sensitivity and compassion in students and provide the foundation for future learning and care for the biotic communities of Earth and their inhabitants. Consequently, this study examines the pedagogical and dynamic frameworks of environmental inquiry, place-based learning, humane education, and holistic learning as perspectives that support transformative learning and the adoption of new narratives to re-imagine our relationship with the natural world.

V. Transformative Learning

Education can be a powerful tool for transforming worldviews and, as a result, initiating pro-environmental thinking and corresponding behavior. Curricular design, academic environments, and pedagogy, in general, can be introduced through anthropocentric paradigms (Orr, 1994). For example, the human costs of climate change can be discussed. This might be easier for some educators than a biocentric, holistic, compassionate educational paradigm, which may seem more foreign because it is not a part of traditional curriculum, teaching and learning. An environmentally sensitive approach to learning can foster altruism and care for others (as opposed to a more self-interested approach) through the transmission of values and ethical principles. It can teach students to engage with and connect with the world, which can be juxtaposed to seeing the world as something intended to serve their needs. As Orr (1994) relates: “much of what has gone wrong with the world is the result of education that alienates us from life in the name of human domination, fragments instead of unifies, overemphasizes success and careers, separates feeling
from intellect and the practical from the theoretical, and unleashes on the world minds ignorant of their own ignorance” (p.17).

Academic success and progress are often equated with earning large sums of money, and adopting a consumerist lifestyle at the expense of the Earth community, which includes current and future generations who live (or will live) in poverty caused by globalization, climate change, and the exploitation of other animals. Yet all too often, instead of prescribing values that invoke care and are conducive to a more harmonious approach to nature, Environmental Education prescribes management and control of nature (Leopold, 1948) through what Orr terms (2004) “technological sustainability” (e.g., technological fixes to complex problems that could be avoided in the first place through less reliance on technology). The approach to Environmental Education I am advancing here involves a more holistic, less managerial, approach. Real transformation is possible, but it does not happen overnight. Educational philosopher Ralph Metznwe (1995) writes:

[We] as a species are suffering from a kind of collective amnesia. We have forgotten something our ancestors once knew and practiced – certain attitudes and kinds of perception, and ability to [empathize] and identify with non-human life, respect for the mysterious, and humility in relationships to the complexities of the natural world. (as cited in Hathaway & Boff, 2009, p. 11)

How can transformative learning occur and challenge the status quo? Educators can guide students toward examining their own interpretations and beliefs in order to participate in a discourse that challenges existing worldviews (Mezirow, 1991). Transformative learning, as defined by educator and scholar Edmund O’Sullivan (1999), involves:

. . . experiencing a deep, structural shift in the basic premises of thought, feelings, and actions. It is a shift of consciousness that dramatically and irreversibly alters our way of being in the world. Such a shift involves our understanding of ourselves and our self-locations; our relationships with other humans and with the natural world; our understanding of relations of power in interlocking structures of class, race and gender;
our body awareness, our visions of alternative approaches to living; and our sense of the possibilities for social justice, peace and personal joy. (p. 8)

Transformative learning can occur when persons become aware of the worldview that dominates their thinking, and engage in self-reflection. For this reason, I examine the dominant worldviews dictating education, and suggest alternate worldviews for a more compassionate and just world.

All learning invokes change, but not all learning is transformative (Mezirow, 1991). Similarly, critical reflection, in and of itself, does not produce transformation (Brookfield, 2012). One also needs to recognize, analyze and question assumptions, which are often taken for granted. I inquire, throughout this thesis, if transformative learning can happen as a result of a deepened understanding of knowing the world bio-centrically and compassionately, and learning to be in it, in that way (what I will simply call “knowing and being”). Transfomative learning theory suggests that learners move from a limited worldview or knowledge that is often unquestioned to a broader, deeper knowledge of their place in what Berry (1988) calls “the universe story.” Anthropocentric assumptions are typically learned at an early age. They are socially conditioned through cultures, traditions, institutions, and socially accepted practices. I suggest, in this study, that transformative learning – one that challenges long-held but essentially incorrect, inherited assumptions – is relevant, especially for children who often articulate a feeling of being separate from nature (Mortari, 1997). Children are born with the ability for biophilia and a love of animals, but they may either learn to repress these natural inclinations in part because animals are not a part of their daily lives (Louv, 2008, Patton, 2006). A re-framing of one’s worldview from an anthropocentric to a biocentric worldview is often needed, even for children, who see the world as presented by their families, their culture and school ecology. It is necessary to help children reflect upon their relationship with animals and the natural world, in order to question cultural assumptions and practices that may be unsustainable or lacking empathy.

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6 For instance, racial superiority, although dominant in some societies, has been challenged in contemporary Western culture, and reflects a transformative learning curve that is still altering social norms, culture, and human relations.
Reflection is a part of transformative learning; but in order for learning to be considered transformative it needs to involve a questioning and/or restructuring of how one considers and behaves in the world (Brookfield, 2012). This may occur through a disorienting dilemma or experience, which often occurs to those who adopt a non-anthropocentric yet essentially humanistic view of the world. This worldview is framed in terms of human interests, and may still regard nature and animals instrumentally, but is more holistic in its approach, recognizing the necessity of protecting the environment for the sake of humanity. This view can be juxtaposed with views of nature and animals as having inherent worth, independent of human interests.

Recent approaches suggest that transformative learning can occur through an intuitive and unconscious process (Dirkx, Mezirow, & Cranton, 2006), expanding on Carl Jung’s (1975) notion of unconscious functions. Jung’s theory suggests that within our unconscious we hold beliefs, ideas and feelings of which we are not readily aware; and to seek wholeness, we need a communication between our unconscious and conscious selves. Jung maintains that dreams can connect us to our unconscious selves and John Dewey (1934/2005) suggests that the experience of art helps us to find meaning in our lives. In this thesis, I suggest that the experience of art is a way to find to reveal our inner landscape and examine our unconscious selves. This becomes an important point, as many students are unaware of their own views and inherited norms and simply assume the dominant worldview. Reflection can occur as a result of an arts-based Environmental Education. With younger children, as mentioned in this study, transformation is an intuitive and unconscious process, whereas for adults it tends to be more conscious and deliberate.

The philosophy known as “constructivism” advances the idea that we glean meaning from knowledge, from what could be called meaning-making or world construction. Transformative learning carries over into this meaning-making. Theorists such as Dewey, Piaget, and Montessori argue that meaning extends beyond mere one-way transmission of knowledge from teacher to student, and instead requires “transactional learning” (Mezirow, 1991). In transactional education, the learners’ own experiences, critical thinking and inquiries are important to the achievement of a
transformative learning experience. Mezirow (1991) asserts that meaning exists within rather than outside of ourselves, in books for instance, and that meaning is “acquired and validated through human interaction and experience” (p. xiv). Transformative learning theory, then, is based on the assumption that we all perceive and interpret experience in our own fashion and that our worldviews are often determined by perceptions which are uncritically influenced by our common culture and community. In contrast, transformative learning is a “process of examining, questioning and revising those perceptions” (Taylor & Cranton, 2012, p. 5). The theory of transformative learning is central to this thesis, which proposes a re-thinking of our place in nature.

Shifting ecological consciousness requires either transforming our narrative and worldviews, or honouring the Earth-centered worldviews that children may already have, thereby validating their emotions and thinking. This connection to all living things and a planetary consciousness is at the heart of eco-literacy. Eco-philosopher Joanna Macy (1995) argues that we need to shift our relationship to the natural world that recognizes we are not above it. She writes: “given the fragility and limited resources of the planet, given our needs for flexibility and sharing, we have to think together in an integrated, synergistic fashion, rather than in the old fragmented and competitive ways-and we are beginning to do that” (p. 258). Schools, educators, communities and students alike are beginning to recognize that what you do in one place affects a life (or lives) elsewhere.

Some students are beginning to express intense emotional participation in what is happening to the Earth and, accordingly, they learn to cultivate a strong empathy for all life. For some, this takes the form of climate activism; for others it takes the form of advocacy for endangered species; and for others it may take the form of animal advocacy or environmentalism predicated on deep ecology. Students who engage in environmentally focused art practice have noted that they feel an increased sensitivity toward others and a more ecologically oriented way of thinking about their lives in general. One sixth grade student who created a life-sized sturgeon fish sculpture for her biodiversity study of Lake Ontario stated: “I think of them differently now. They
are very complicated animals. It’s changed my thinking for sure” (Personal communication, May 10, 2012).

Educational scholar Hensoon Bai (2009) argues for a more participatory consciousness, a recovered holistic and sensory approach to Environmental Education that is inclusive of emotions and poetic subjectivity. This kind of awareness, self-reflection, and sensitivity is central to the practice of environmental inquiry which values emotional intelligence. Instead of an objective approach to Environmental Education and learning, this study seeks to define environmental inquiry and art as a subjective sensory experience that can engage learners and broaden their thinking. I argue that an eco-centric approach which stresses subjective sensory experiences is necessary for challenging the current status quo that is utilitarian and sees the natural world as separate from the self/human world. Self-reflection can offer a heightened understanding of our immediate environment and sense of place in the larger Earth community, and it is an important part of Environmental Education and learning.

VI. Conceptual Frameworks for the Study

i. Ritual Theory

To provide a theoretical framework for the study, I draw on some of the insights from Catherine Bell’s (1993) ritual theory which focuses on embodiment in ritualized behaviors in everyday life and the open-endedness of interpretative approaches to which rituals lend themselves, including the Environmental Education paradigm. Ritual theory is an important conceptual framework for this study as I investigate how the media and technologies are pervasive in the lives of students of all ages and the possibilities for using these tools for artistic expression and inquiry to engender an increased engagement with nature. This focus provides insights into the ways that our relationships to media and technology, animals and art, inquiry and play, nature and self are socially and culturally constructed. It also highlights a means for creating the conditions in education to construct an ecological identity. Our rituals communicate what is meaningful and
meaningless in our lives, but they are also the way in which cultural content is “organized and transmitted on particular occasions through specific media” (Bell, 1993, p. 39). In this manner, ritual may be thought of as a “category of experience” (Bell, 1993, p. 3) that bridges the dualism of thought and action, bringing focus to what we deem important and how we learn. The focus on ritual behavior and what philosopher Charles Taylor (2004) terms "social imaginaries” opens the conceptual space for an exploration of multiple paradigms, including environmental inquiry, timeless learning, and holistic learning (Chiarotto, 2011; Miller, 2006, 2008).

Holistic learning in the curriculum is an antidote to the fragmented thinking that often leaves students separate from nature. Systems thinking (Orr, 2004; Capra, 1982; Goleman, et al., 2012) shifts thinking from parts to the whole, and from objects to relationships; when students learn about how the larger system works, they can begin to see that everything is connected. Learning to think in terms of relationships, and to see the world as an interrelated whole, can be transformative. John P. Miller (2006) proposes a holistic framework for “timeless learning” (p. 3) which is a multidimensional experience that combines integrative, connected, embodied, soulful, transformative, participatory, and immeasurable learning. These particular paradigms (holistic learning, timeless learning, and environmental inquiry) demonstrate that our collective health and wellness depends on our ability to use our imaginations, to have a close relationship with nature, and to see learning and the world holistically. These paradigms may be thought of as cultural resources. Cultural resources are practices and worldviews that can be used to engender ethical self-reflection through shared representations and to achieve cultural transformation towards the ideal of a good society (DiCenso, 2011). Along with Berry (1988), Orr (2004), and other environmental educators, I would argue that education is a cultural resource that can be used to bring about positive cultural transformation by challenging of anthropocentric assumptions and advancing a biocentric worldview.

ii. The ‘Great Work’: Creating Narratives

Social imaginaries are the set of values and symbols that are common to a group and society.
A cosmological shift and a new vision for education are needed to change our environmental trajectory (Berry, 1988; Orr, 2004; Clarke, 2012; O’Sullivan, 1999). Part of the process for re-imagining education and how we are to live sustainably with the Earth community is to re-imagine ourselves in renewed relationship with nature. Authors Marcia McKenzie, Paul Hart, Heeson Bai and Bob Jickling (2009) write in their introduction to *Fields of Green: Restoring Culture, Environment and Education* that there is a global shift now underway in the ways we are seeing our relationship with the Earth and the cultural imaginaries of our time (McKenzie et al., 2009). Culture greatly influences our imaginations and our interpretations of reality (McKenzie, 2009). According to McKenzie (2009) we live by the “strengths and weaknesses of our imaginaries” (p.1). By imaginaries, McKenzie is referring to the imaginative world we create to give definition and direction to our lives. Sociologist Peter Berger (1967), in *The Sacred Canopy*, refers to a *nomos*, which (it can be argued) is essentially the same thing.

Advocates for holistic and Environmental Education recognize that not only does the curriculum need to reflect the new imaginaries; it must also help articulate the “new story” we will live by (Berry, 1988; Palmer, 1998; McKenzie, 2009). In other words, there is also an important social and political and, ultimately, a practical dimension to holistic education. It is not just about teaching the student; it is also about helping to shift the direction of society from anthropocentric to biocentric worldviews, for the benefit of the students and of all of society. The possibility of re-imagining education is the basis for a re-examination of our relationship to the Earth through a holistic paradigm. And it should be added here that social and political objectives are not new to the classroom. O’Sullivan (1999) argues that educational institutions serve the needs of our current “dysfunctional industrial system” (p. 7) and the “calling of the global competitive market” (p. 1). Social and political objectives are already embedded in the educational system we have now, which reflects a largely anthropocentric worldview.

Berry (1988) addresses our anthropocentric ways of thinking in *The Dream of the Earth*. He states that such ways of thinking are a “violation of the Earth’s most sacred aspects;”
attempting to provide a remedy, he adds that a “shamanic” or spiritual insight is important to help us understand our relationship with the Earth and with all living creatures (p. 209). In other words, we need to imagine ourselves as a part of the natural system in order to adopt an ethic of care. We need not only to find new ways to connect with the natural world and one another (Hathaway & Boff, 2010; O’Sullivan, 1999; Capra, 2005), but also to adopt and nurture new Earth-centered narratives and life-affirming eco-identities for how we are to live (Berry, 1988; Swimme & Tucker, 2011; Orr, 2004; Thomashow, 1995; Louv, 2012). Berry suggests that human beings live by the stories that we tell and that the ‘great work’ of our time is to re-create new stories that will embrace the Earth community, help us find our place in the natural world, and address our environmental crisis. This is a part of what Berry (1988) deems a new cosmological consciousness which extends beyond the biocentric perspective, as it includes the universal story. As professor of religious studies and noted Thomas Berry scholar Stephen Scharper (2011) writes:

The Universe, as contemporary science shows, is in a process of development, and, for Berry, represents the primary source of revelation. It is only when we embrace this "story" of the unfolding cosmos that we can begin to discern our proper role within the cosmos. We are, he concludes, the "self-consciousness" of the universe, and all of our social, ecological, religious and political action must stem from this insight, or, alas, we may slide into the same type of ecologically and socially destructive fault lines currently cross-cutting our existence. (Scharper, 2011, para. 6)

Human beings, according to Berry (1988), tell stories that explain and give meaning to the past and shape and inspire the future. Industrial society is experiencing a crisis of identity, in part because our “story” (worldview) is inadequate for teaching us how we are to live in this changing world, and in part because the anthropocentrism of this worldview conflicts with our own essential natures, since we evolved in nature. In this vein, education needs to be reconceived as “a part of the larger conversation that every great philosopher from Plato through Rousseau, to John Dewey and Alfred North Whitehead assigned to it” which is the timeless question of “how are we to live” (Orr,
O’Sullivan (1999) notes that we are living in the “terminal stages of modern history” and the “fundamental education task of our time is to make the choice for a sustainable planetary habitat of interdependent life forms” (p. 1-2). O’Sullivan, Berry, and Orr, along with other educators and philosophers, recognize the need for an education that changes not only how we think and act, but how we feel and respond to nature, to one another, and to the world around us.

Author and mathematical cosmologist Brian Swimme (2011) suggests in the documentary that accompanies the book of the same name, *Journey of the Universe*, that we need a new story that is coherent with our past knowledge, in order to give us a way forward. In this view, humanity can be reconceived and repositioned as a part of a vital, natural dynamic, beginning with educational systems, which provide curricula that aim to foster a greater understanding of how we are all connected to one another, the world around us, and all living things (Ontario Ministry of Education, 2011). Furthermore, educators, and communities can aim to guide students in using technologies and media in ways that not only highlight this connection with the natural world, but also help to narrate and give voice to the experience.

Several environmentalists, theorists, and spiritualists believe we are in a moment of great change in the human story (Berry, 1988; Orr, 2004; O’Sullivan, 1999). We are being forced to question our existing narratives and replace them with new stories, new visions that are more consistent with sustainability. Narratives, as a means of artistic expression and communication, can convey personal experiences and help us articulate and find meaning and focus in our lives. We write, literally and symbolically, to communicate our fears, cares, loves, hopes and dreams. Creating and writing is a way of discovering and voicing where we are and where we want to go together. Maxine Greene (1995) says that evoking the imagination can move us from a fixed static reality to envisioning what may be and who we are in the world. Communicating the human story as a part of the Earth story requires adopting an artistic and imaginative leap of faith. This is a part of what Berry relates as our ‘Great Work.’ To experience nature, directly or through artistic
expression, signifies an active relationship with the world and a “transformation of interaction into participation and communication” (Dewey, 1934/2005, p. 22).

iii. Experiencing Nature, Experiencing Art

Artistic exploration and play can help us embark on an exploration of a planetary consciousness (O’Sullivan, 1999) and new ways to see and be in the world. With this thesis, I am suggesting that one way to embark on this ‘Great work’ is through the act of creating nature-oriented or inspired art, and educating young people to connect with their natural surroundings and the animals that live there in order to tell those stories of the Earth. The vicarious experience of art and self-expression can help students explore different contexts for learning about and in nature, which in and of itself can be transformative. I investigate how Earth-centered worldviews may be explored through environmental inquiry and the arts. John Dewey’s (1934/2005) work, *Art as Experience*, is useful as a framework for understanding the importance of art in creating presence, by which I mean an aesthetic appreciation and also the process of integration with one’s environment. The living embodied experience of art is what Dewey refers to as an “active and alert commerce with the world,” an integration of the “self” with the world, and “the promise of that delightful perception which is esthetic experience” (pp. 17-19). Although life and education are often compartmentalized (Orr, 2004; Dewey, 1934/2005, p. 21), the experience of art as inquiry can help us find that we are connected to all things. Education scholar Paul Clarke (2012) writes in *Education for Sustainability*, that “...once we get the point that we are a part of the planet, and not apart from the planet, all the rest of the story comes together... . We need to become Naturally Smart” (p. 30).

Environmental Education has changed radically in the past few decades to reflect this changing narrative. Recognizing that students need to explore and engage in direct experiences with nature is a part of this changing narrative. Some students, schools, and communities are showing an interest in moving away from an enchantment with technologies and media and reconnecting with the realities and experiences of nature. The Waldorf Schools do not use any
technology in the classroom and advise taking it out of a child’s home life because of their philosophy that technologies have ill effects on creativity and learning and that a child learns best through direct experiences in the world and with others. The introduction of nature learning programs, such as the P.I.N.E. Project in Toronto, is a good example of how educators are heading out of the classroom and into the woods.\(^8\)

Educational scholar Stephen R. Kellert (2002) in his research, “Experiencing Nature: Affective, Cognitive, and Evaluative Development in Children,” defines three modes of experience with nature: direct, indirect, and vicarious/symbolic. Kellert’s classifications are used as a framework for exploring how students engage with nature, and the effects different experiences have on their understanding and identity shaping (Kellert, 2002, p. 118). Direct experience relates to contact with non-human species and wild places, unmitigated by human control. No matter how advanced or powerful, technology cannot replicate or simulate the natural world: “Nature is intrinsically and qualitatively different from anything the child confronts in the human built world” (Kellert, 2002, p. 140). This is also true of virtual worlds that may mimic nature but cannot replace the direct experience of it. Nature gives life and, as such, it is a powerful and changing environment that requires awareness, alert attention, and care. Biologist and author Rachel Carson (1956/1988) recognizes the actual beauty but also the symbolic presence in nature: “A child’s world is fresh and new and beautiful, full of wonder and excitement…. There is symbolic as well as actual beauty in the migration of birds, the ebb and flow of the tides, the folded bud ready for the spring” (pp. 54/100). Carson makes an important point, namely that direct experiences with nature can become symbolic and re-created in memory and imagination. In my own observations and experiences while working with students from kindergarten through higher education, direct contact with nature, such as seeing a snake or smelling a flower, is the most powerful lesson. In addition, those who re-created those experiences artistically, through storytelling, drama, painting,

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\(^8\) P.I.N.E. project is a Toronto based outdoor education program that seeks to build relationships between individuals and the environment, using the arts and naturalist studies in the process to create a ‘culture of nature connection.’ See http://www.pineproject.org/ for more information.
writing, taking photographs or making videos, found the experiences to be even more memorable. Moreover, sharing those experiences had an impact on the continued contemplation and connection to the represented object. A student shared her experience with her peers when she encountered and photographed a giant Hibiscus.

Figure 1: I’ll never forget the giant bloom I saw in someone’s yard. It was the biggest flower I had ever seen. I took up the whole yard. I had to take a picture with my phone to share it. It was beautiful. We all went to see it afterwards. It was that incredible. And I sent the picture to everyone too, so we still share it. The picture doesn’t do it justice, but it is still memorable this way. It’s called a *Hibiscus*. (TDSB student, 12th grade).

Unfortunately, few children today are experiencing nature directly; Orr (2002) and Pyle (2002) relate that opportunities for ‘awe’ and ‘wonder’ (Rudolph Otto’s ‘numinous’ experience referred to earlier) are diminishing as urban centers grow and the use of virtual worlds increases. Indirect and vicarious experiences of nature are common for those who live in urban centers. The former, indirect experiences of nature, implies contact with nature that is controlled and restricted, such as zoos, science museums, gardens and, to a lesser extent, pets. Vicarious or symbolic experiences of nature occur in “the absence of actual physical contact with the natural world”
(Kellert, 2002, p. 119). An example would be viewing nature through a television or computer screen. This vicarious kind of experience with nature is an important consideration for this study, as media and technology increasingly represent nature for people in urban settings, and are used frequently in classroom learning.

Film, print, books, and computers provide an enormous amount of symbolic and vicarious experiences with nature, primarily through visual channels, although such experiences can be multi-sensory as well. For instance, two grade six students in a Toronto District School Board (TDSB) class I visited created a video about the polluting effects of the Stelco steel plant in Hamilton, Ontario. They went to the factory to make a film, shouting over the traffic and noise pollution, gagging from the smell, and making gestures to demonstrate the low air quality. Their investigative documentary showed how hard the conditions were for life in the surrounding area. Their video had a visceral effect on the other students who watched the film; squirming in her seat, one student asked the young filmmakers: “did you get sick from just being there?” and “why isn’t it shut down?” The importance of symbolic experiences with nature for environmental learning cannot be underestimated. Students create and consume media daily and, when given the opportunity to make videos about nature and wildlife, become engaged through both the direct experience and their creations. Older students can be encouraged to take their interests outside the classroom and use their cell phones and document the beauty of the natural world. Shared images and ideas can have a transformative effect. Four years ago I began capturing images (see Figure 2, 3, 4, 5) with my daughter who, in turn, shared them with her friends. As a result, most of her friends began taking nature photographs and sharing them with one another on social media.
Figure 2: Moss, R. York & K. & A. Bridgers, Toronto, ON

Figure 3: Mushrooms, R. York & K. & A. Bridgers, Toronto, ON
The vicarious or symbolic experiences that occur in creating art can be a product of a direct experience with nature and are not to be undervalued. Kellert (2002) recognizes that children’s stories and books use animal images and representations to teach classification and counting. Children are introduced to nature early on, both indirectly (through zoos and pets) and vicariously (through stories and artistic depictions). Vicarious experiences with nature relate to what anthropologist Elizabeth Lawrence (1993) calls “cognitive biophilia” (as cited in Kellert, 2002, p.
123) and can be useful for thinking about nature. In many ways, the arts are important for this kind of ‘cognitive biophilia’ as students can create and share representations of nature; however, Kellert references many studies which demonstrate that direct experiences are vital and irreplaceable in a child’s healthy development (p. 146). Kellert’s research also shows that children benefit from a healthy mix of direct, indirect, and vicarious experiences with nature (p. 146-147).

Symbolic representations can also be a part of the learner’s own attempt to make meaning of a direct or indirect experience through an art form, which is also a part of this study’s focus. I investigate how direct, indirect and vicarious/symbolic experiences may all be important factors in developing an ecological identity and consciousness. The creation and sharing of these experiences is critical for learning. The constructivist theory of learning relates that each person must construct their own reality, and therefore experience is the “key to meaningful learning – not someone else’s experience abstracted and condensed into textbook form . . . and shared experience is even more meaningful” (Ellis & Fouts, 2001, p. 23). Identity shaping is considered in this examination of environmental learning, insofar as childhood and adolescent development relates to cultural influences, such as media and technologies, and the possibility of sharing those experiences. Identity shaping is also affected by educational paradigms, curriculum, and teaching that present opportunities for experiencing nature. Therefore, direct, indirect and symbolic modes of learning are considered, showing how students can re-imagine their connection to nature and others.

The different modes of learning are also important in considering learning in, about and for the environment. Learning in the environment relates to direct observation, such as taking students out-of-doors or participating in a place-based learning program. Throughout this paper, I will explore how and why this can be effective. Inspirations for this kind of learning are offered by Richard Louv (2008, 2012), David Suzuki (1997), and Rachel Carson (1956/1998). I also acknowledge the importance of learning about the environment, which occurs when students explore and research a subject online or gather information. However, my focus turns primarily to learning for the environment, which is when we use the arts to communicate a feeling or a
message. David Suzuki is an inspiration for this method as well, demonstrating that these are inclusive definitions for environmental learning. Making murals, videos, taking photographs, and creating community projects are all consistent with learning about the environment.

The subject of using art to develop a connection to nature and place is somewhat new territory for art educators (Inwood, 2008). Artists have, for some time, been using visual arts to raise awareness and engage with environmental concepts, but art educators (including English Language Arts instructors) are just now beginning to explore this emerging field for transformative teaching and learning (Inwood, 2008). Using art for increased awareness of environmental issues and in creating meaningful experiences for students is occurring in individual classrooms and isolated programs (Song, 2008; Kohl, 1991). The need for more arts-based approaches to Environmental Education is being articulated and presented by scholars and educators alike (Inwood, 2008; Orr, 2004; Gablik, 1991). The integration of art and Environmental Education, as suggested by art educator Hilary Inwood (2008) in “At the Crossroads: Situating Place Based Art Education,” is an innovative approach that can help shift the attitudes about the environment partly because it “balances the traditional roots” of environmental learning “(found in cognitive positivist approaches of science education) with the more creative, affective, and sensory approaches of art education” (p. 30). To go even further, I echo Orr (1992) who argues that ecological learning will not be instilled in children unless it is integrated fully into the curriculum.

VII. Integration of Environmental Education: Technology, Media and the Arts

Environmental Education is a complex and diverse field that has evolved over the last fifty years. It began as an out-growth of conservation education in the early 1960’s, and early definitions of Environmental Education aimed at “producing a citizenry” that was knowledgeable and concerned about the “biophysical environment” (Disinger, 2005). Current studies reveal that most Environmental Education occurs as a part of the science curriculum, or as a part of nature-learning in one-time events, sole subject and “stand alone” activities (not connected to ongoing teaching and
learning) that are not integrated into the learners’ working knowledge of the world (Simmons, 2005). Many educators still regard Environmental Education as the sole domain of the science curriculum, although it is naturally suited to be interdisciplinary and beginning to be integrated across the post-secondary curriculum (Palmer, 1998; Simmons, 2005; Stefanovic, 2014). At the University of Toronto, for example, a few humanities and social science departments offer interdisciplinary courses on climate change, but the courses, small in number and infrequent, are the exception rather than the rule. Such courses are typically started by an individual educator who happens to be interested in the subject, and are not listed by the departments as core courses in the discipline. At smaller universities and colleges, such courses, easily integrated into nearly every field of human learning, might not exist at all, despite worldwide recognition of the urgency of climate change and its profound implications for all of human society. University of Toronto professor John Valleau (Personal communication, May 2012) argues that every university department should be offering interdisciplinary courses on climate change at this time, considering its urgency and the positive role that higher education can and should play in efforts to mitigate the crisis. Michael Barrett (Personal communication, March 2012) is an economist and another advocate for the expansion of climate change studies beyond the domain of science and geography to all the academic disciplines. But generally speaking, elementary schools, which are naturally suited for a holistic and integrated curriculum, are not using environment as an integrating context for learning (Smith, 2005; Palmer, 1998). Furthermore, studies show that until an articulated environmental curriculum across all grade levels is established, reinforced and supported, the behavior and learning that it promotes will slowly erode (Hungerford & Volk, 2005). Lacking a coordinated and fully integrated Environmental Education will continue to fragment student learning and affect how students view the natural world (Hungerford & Volk, 2005; Volk, 2005).

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9 Simmons (2005) study shows that when subjects are not made relevant to the students’ own lived experiences, or when subjects stand alone, they can easily be forgotten.

10 Valleau argues that the corporatization of education is regressive, because the primary goal of corporations is profit, not the benefit of society (Personal communication, March, 2012).
Art education is well suited, Laura Hicks and Roger King (2007) suggest, to address “environmental problems that emerge at the point of contact between nature and social life” (p. 334). Art is, generally speaking, a means for communication and can “elicit awareness of environment” from the places where it originates. Art educators can teach students about the environment that is near (Hicks & King, 2007, p. 334) and, therefore, most meaningful in their lives. Art is an ideal method for teaching students about place and nature in their own cities and communities. It can foster meaningful relationships with the self, others and, if it is representational art, with the thing being represented. As stated by art scholars Glen T. Dixon and F. Graeme Chalmers (1990), in order to fulfill its total function, art needs to “communicate with” its audience and, in so doing, create “unity and solidarity” (p. 14). While Dixon and Chalmers are not considering the natural world as the ‘audience,’ this could be considered in a biocentric or cosmological consciousness. When a student writes a poem, or paints a picture of the tree in her backyard, she finds a connection with that tree that previously may not have existed, and if it did already exist, that connection is usually now deepened. This experience, then, may create an “ambiguity in both the rendering and the representation” (Blandy & Hoffman, 1993, p.23). Art theorists Doug Blandy and E. Hoffman (1993) are referring to the process when selected spaces become a part of one’s memories and the perspective is forever changed. The place and the person are united in the process of making art and become embodied in a vital, perhaps even sacred, act of becoming. This art is also “fertile soil in which to grow creative approaches to problem-solving, critical thinking, and self-reflexive learning, all necessary for making our communities healthier and happier places” (Inwood, 2008, p. 31).

Art as an experience (Dewey, 1934/2005) is a perfect vehicle for educators, artists, and cultural actors to highlight our species’ changing relationship with nature and the reasons it is important to change. We invest personal meaning and bring cultural relevance to the non-human world when we represent it in our art (Hicks & King, 2007). In fact, human beings have long used the intimate and embodied activity of art making to bring attention to the things that matter in our
Art educators are beginning to help students experience natural environments first hand (Hicks & King, 2007). These experiences are essential for establishing intimate and long lasting relationships with nature (Louv, 2007; Hicks & King, 2007). As Northrop Frye (1963) reveals in his work *The Educated Imagination*, art and science are a part of the same continuum; “art is the world we want to have; science starts with the world as we see it” (p.7). In other words, art identifies and brings nature into the realm of our consciousness and our imaginations. It can lead students to envision the world they would like to inhabit and cultivate the relationships they deem important in their lives.

Some scholars, such as Suzi Gablik (1991), provide a comprehensive theoretical model to arts-integration and environmental learning. Thus theory can be put into practice, but it is rarely done to the extent that it could be. The Ontario Curriculum Guide, *Environmental Education: Scope and Sequence of Expectations* (Ontario Ministry of Education, 2011) provides opportunities for students in kindergarten through the twelfth grade to create, present, reflect, respond, and explore the foundations of environmentally responsible practices across the curriculum. However, in speaking with many teachers from elementary through secondary schools across the Greater Toronto Area, I noted that most were not familiar with this document and were not integrating environmental learning into their teaching practices. According to the over two dozen educators with whom I spoke during the 2012-2013 school year, Environmental Education was part of the science curriculum. It was not integrated into other fields of learning. Teaching an integrated or holistic approach to Environmental Education is a challenge for many educators who equate Environmental Education with science and feel unprepared to change their approach.

This study aspires to make a significant contribution to teaching and learning by examining some of the ways in which the arts, and the use of technologies and media as tools for exploration,

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11 The earliest known cave paintings, and the oldest known surviving art by human beings anywhere, is in what is now known to be France’s Chauvet Caves. Over 30,000 years old, from the Pleistocene era, they show nonhuman animals as free and powerful (not imprisoned or tame or subjugated), signifying their great importance in the lives of human beings at the time (Apostolis Cappadona, 2006).
may provide opportunities to re-imagine nature and connect and support new narratives for environmental sensitivity. In other words, it attempts to define and locate how creativity, compassion and an “eco-sophic” (Sauve, 2009) outlook, which is the development of an ecological vision for humanity, can be introduced into the classroom through the process of art-based environmental inquiry. Arnie Naess (1989), the founder of the environmental ethic known as deep ecology, states that the ecosophical outlook is developed through “an identification so deep that one’s own self is no longer adequately delineated by the personal ego or the organism. One experiences oneself to be a genuine part of all life” (as cited in Thomashow, 1995, p. 21).

Paul Clarke (2012) suggests that our technologies and arts can help shape our consciousness toward an ecologically sustainable world, but only if we also reconnect to nature, community, place, and one another. When we embrace our creativity and realize that “nature is in us,” we can shift our focus from “ego to eco” (Clarke, 2012, p. 9). Clarke identifies the anthropocentric mind as the ego, which is selfish and contained and finite, and the eco as the mind that embraces community, sustainability, creativity and connections. While obviously a simplistic dualism, the ego-eco model is useful for envisioning the necessity of some kind of transition from the Technozic Era, dominated by unsustainable industrialization, to what Berry terms the Ecozoic Era, one focused on humanity and the Earth community. The eco identity has longevity and relies upon systems thinking, which is the hallmark of being eco-literate (Clarke, 2012; Orr, 2004). To become eco-literate involves developing ecological knowledge but also cultivating an emotional intelligence. Eco-literacy also involves finding and making connections in one’s learning, and can be considered an outcome of an integrated Environmental Education.

In investigating how the integration and use of media and technologies play into a student’s everyday learning about the concepts of environment and nature, I found that most school-aged children are familiar, to some extent, with technologies such as cell phones, ipads, and personal computers. While kindergarten and first grade students might not have their own cell phones, most know how to use their parents’ phones and ipads to take photographs, play video
games and even text. Recent studies show children are very susceptible to commercial interests. In *Confronting the Challenges of Participatory Culture: Media Education for the 21st Century*, media scholar Henry Jenkins (2009) argues that there is not enough coupling of media literacy with the pedagogical and responsible uses of these tools for connectivity and learning (p. 22). Given the dominance of more ego-oriented (and thus non-eco) technological uses, very often dominated and influenced by corporate interests (as seen through advertising and what Marx termed *commodity fetishism*), it must be asked whether technologies and modern media can adequately support the connection to nature and non-human animals. In other words, even if the potential for eco-literacy exists through the use of media, is the dominance of ego-interests simply outweighing any potential benefit?

Media resources such as books, film, music and stories can instill environmental sensitivity and have a transformative effect on learners of all ages (Volk, 2005), but are they doing so, and if not, what is required to make that shift? As tools for communication, technologies and media define and are defined by their content, they influence the narratives that students and educators share inside and outside the classroom. But, more than that, the practice of using electronic media shapes the very thought processes of the user, by shaping thoughts according to the parameters of the computer program and user interface. Two well-known Canadian thinkers anticipated this shift in the way we interact with the world: Marshall McLuhan (1994) famously stated that “the medium is the message,” which refers to the way in which media are themselves influencing us, independent of their content; and philosopher George Grant (2000) went further by stating that the computer influences the very way we think. He compared the computer to the car, which reduces the user to a specific role (driver). Grant’s critique, and the critique of technology as a field, has been particularly critical of this reduction of human beings through electronic media. Thus, another way of stating the question above is to ask whether eco-literacy, through electronic media, can adequately transcend the limitations of the medium itself, given that it yokes the user to programming and interfaces that reduce the user from an embodied being to a purely cognitive and
sedentary being. I would argue that while these media are potentially valuable, if they stimulate users to engage with nature directly, they cannot replace embodied practices, which is why art (which is necessarily more embodied and tactile) is necessary.

Hicks and King (2007, p. 332) believe that the arts, represented in our stories, music and drama, and visual culture, also represented through our technologies, can provide educators with the tools for “negotiating an interface between culture and nature,” and between the human and non-human. Electronic media can have a positive role to play, especially if we take into account the fact that their widespread use is a fait accompli. Thus, any content devoted to eco themes, despite the limitations inherent in the medium itself, is relatively better than the same medium being used to spread ego-interests. To date, the discussion of how this negotiation might occur and the potential learning outcomes is a novel one. Learning to live in harmony with nature, to live more sustainably, requires a shift of imagination, creativity and the development of a different sensibility.

As noted above, most educators are not incorporating Environmental Education across the curriculum or incorporating Environmental Education concepts into their teaching, mainly, according to some researchers, because a lack of knowledge about the environment (Smith-Sebasto, 1997). While there are individual and small collectives of educators who are incorporating and applying their own understanding of Environmental Education and ecological knowledge to their teaching and learning, they are the exception. Examples of Environmental Education in practice can be found in Eco Literate (Goleman, et al., 2012), Natural Curiosity: A Resource for Teachers (Chiarotto, 2011) and As If the Earth Matters (Henley & Peavy, 2006). In what Daniel Goleman (2009) calls Schooling for Sustainability, some eco-schools and green schools are responding to the need for people to feel connected and to learn from natural systems. Such schools teach an integrated, holistic Environmental Education model founded on environmental inquiry and the practices of eco-literacy. This kind of education is a part of a “bold new movement” (Goleman et al., 2009, p. 3), not visible in the general arts curriculum. Compassionate education, focused on
integrating animal consciousness into education – though far less well known that eco-literacy and advanced only by random individual educators – also represents a bold new direction for education, one that is very much tied to eco-literacy. Animal issues are intimately connected to environmental issues and have historically been connected through two areas of scholarship: critiques of animal exploitation through industrial agriculture and science (both of which use nonhuman animals instrumentally), and through the intersection of two related branches of practical ethics, environmental ethics and animal ethics. Overall, Environmental Education aims to awaken an awareness and understanding of the natural world and its inhabitants with whom we share this world.

Art and technologies are beginning to be incorporated by learners of all ages into their own practices of environmental inquiry; but, more often than not, they are still being left outside the traditional curriculum. For the purposes of this study, I look to holistic learning, environmental inquiry, eco-literacy, compassionate education, and place-based learning, as they all extend beyond the scientific and non-value laden Environmental Education curricula and aim “toward a deeper transformation of the substance, process, and scope of education at all levels” (Orr, 2005, p. x). These broad-reaching pedagogies provide opportunities for weaving a tapestry of subjects and for making learning relevant.

VIII. Rationale for this study

As a former English language arts, media literacy and environmental educator in elementary, secondary, and post-secondary schools, it was my experience that learners of all ages are interested in communicating their ideas with others. Relationships matter. The arts are a natural path for communicating with others the critical issues in our lives and finding a common ground for understanding; they also help us articulate and discover our own emotions. As poet and novelist E. M. Forester once wrote: “How can I know what I think, until I see what I have to say?” (as cited
in Barry, 1989, p. 71). Sometimes we need to write, sing, dance, and express ourselves freely and creatively in order to find a deeper meaning in what it means to be human.

Growing up, I was fortunate enough to spend time on canoe trips with my family, and summers with my grandmother in the Smokey Mountains of North Carolina, tending gardens and watching birds. These were important and memorable moments from my childhood, and crucial in my identity development. The canoe trips immersed us in wild places, seeing beavers splash in the river, and looking up into the starry sky at night. I recall my father on one canoe trip asking the children to keep a journal. Sketches, notes, poems and later stories and narratives filled the pages. There is a mystery and a love of the world and the universe that is born in those who take the time to look and inquire, to feel and to be with the natural world. Without knowing it in any conscious way, I experienced a sense of the vastness of space and the cosmos, the sense of the mysteries of life and death. In nature one can develop an appreciation for the beauty of interactions of natural things and systems, a beauty that in our busy world we often overlook. When I was with my grandmother, I recall walking all around her town and watering the town flowers with recycled milk jugs. Taking time to be in nature, and taking time to care for and consider the beauty of the world was a part of my childhood. Later in the afternoons, as we played cards on the porch, we watched birds come and go until the fireflies began to light up. The cicadas and the tree frogs would come out and the night orchestra would begin. These somewhat simple experiences out of doors gave me a love for nature that has stayed with me all my life. Stewardship, sensitivity, and care for the natural world were instilled in me from a very young age.

As a parent and educator I have enjoyed leading children out of doors to find a place away from traffic, to observe, consider, reflect and write. Creating poems and stories, taking photographs and videos are some of the arts that give me a way to communicate my love for the beauty of this world, and my hope that others see and share with me this affection. I learned to love the Earth and Earth communities long ago, and that is why I am compelled to initiate and nurture a continued connection with the world around me. I also feel it is our job as educators and citizens of a biotic
community to teach children how to love the Earth and care for all living things. We teach children to read and write, to do math and science but, more often than not, are we teaching them to listen and love the Earth as well?

In my own experience as an educator over the past fifteen years, I have noted that taking students out of doors and engaging them in creative inquiry increases their interest in their environment. After such excursions, students have become more interested in their learning. For instance, in one California middle school classroom where I taught in 2009, students investigated the effects of over-consumption, both globally and in their backyards, and then created their own video, of and for students, in order to develop an awareness of over-consumption and to promote their own “buy nothing day” campaign (modeled after the campaign by Adbusters). Their campaign was born from their artistic exploration of their community and the effects the pollution had on the aesthetic of place and their own feelings toward their neighborhood. Reflection and creative inquiry helped bridge the gap between media literacy and Environmental Education. Students found that their own habits, such as littering and buying plastics, were affecting the wildlife in the high desert area. The practice of art and media had a transformative effect on their learning.

It has been my experience that students, when given opportunities for engaging in artistic endeavors involving technologies, media and environmental inquiry, tend to become more alert and eager to learn. I observed a co-creative dialogue created by the use of technologies, media, and art in order to explore nature. Media was no longer seen as a consumer-oriented technology; rather, it became a tool to mediate and extend into the surrounding social and natural world. I began to explore the challenges that schools, students, and communities might face in introducing art as a vehicle for Environmental Education, and how technologies and media could become useful tools in engendering a creative and compassionate connection with the Earth community.

IX. Research Topics and Aims
This study is about the integration of the arts and technologies into the curriculum for Environmental Education. It argues that the arts can engage students in environmental sensitivity, encourage the vital practices of ecological literacy, and engender humane, holistic and transformative learning experiences. I hope to present a clear and consistent vision for Environmental Education, without pinning it into any one pedagogical framework for learning.

Rather, I take a pluralistic approach, introducing several frameworks with the idea that each of them can help complete a part of the picture, and in recognition of the fact there are many different possible approaches to Environmental Education. To adopt one approach would not only be limiting for this study, but also antithetical to the ever-evolving organic constructs that are inherent to nature. Environmental educators recognize that real environmental learning, like nature itself, needs to be flexible and adaptive (Sobel, 2005; Clarke, 2012); therefore, students will learn differently in one place than in another place, and each will change over time. I use the perspectives from the holistic curriculum, but also environmental inquiry, humane education, and place-based learning models. I use examples from student learning in language arts and visual arts as they explore nature, place and community.

I suggest that the arts are a means for negotiating the boundaries between nature and culture in order to ‘re-imagine’ a connection with the natural world. I explore how the integration of art and inquiry can intersect with play and imaginative learning about our place in the natural world, and thereby support a healthy vision for the Earth and our communities. To this end, I discuss philosophical, pedagogical and conceptual matters in order to establish the landscape and framework for this integration.

This thesis will entail an exploration of existing worldviews that are affecting Environmental Education, and how they challenge the development of an ecological identity. I also present how the arts may result in a discovery and a communication of our collective relationship with the Earth and, more particularly, nonhuman Earth communities. I hope to begin a discussion of how students, educators, schools, and communities can learn to engage and re-imagine a
connection with the natural world, and begin adopting an arts-integrated curriculum for environmental learning.

I explore the benefits and potential use of media and technologies for advancing Environmental Education, noting that these technologies have been widely and independently adopted by most of young people. I also examine media and technologies for positive ecological implications and evolving literacies, but acknowledge the drawbacks and problems consistent with their use. Electronic media may offer new opportunities, but they can also hinder opportunities for engaging with nature. They have potential but also drawbacks. Technologies and media are not a replacement for time or direct experience in nature, but they can foster an interest in the natural world that can serve as a prelude to more engaged experiences. The questions I explore are: can art re-enchant us with the ‘real’ world (nature)? Is media and technology useful in this venture? How can each of these individually and collectively help students engage with what may be called ‘learning for the Earth’ (e.g., eco-literacy)?

This study offers a conceptual model for an environmentally integrated curriculum, thus helping to establish a conceptual path toward a compassionate, place-based holistic learning. Throughout this study I attempt to uncover why art, as a creative and playful approach to learning, and technologies and media, as powerful tools, can be used in teaching environmental education, and how this kind of learning can have a transformative effect on student lived experiences and the environment as a whole. It is my hope that this discussion will contribute to a better understanding of how the arts and the use of technologies and/or media can open up the possibilities for Environmental Education and initiate opportunities for transformative learning for students, schools and communities alike. I also hope that this study may play a role in transforming our school ecology and bring Environmental Education into the general arts curriculum.

X. Summary of Chapters
Chapter I begins with an overview of the pressing environmental issues today and the need for an integrative Environmental Education. I examine how the increase in technologies and media in the lives of students and the culture correlates with the decrease of direct experiences in nature, and the effect that has had on learning. I also examine the current landscape of Environmental Education curricula and learning practices, such as holistic education and environmental inquiry, as means for achieving environmental sensitivity, which is considered a goal for environmental learning. Chapter I introduces my focus for this thesis, listing the challenges and reasons for using the arts and technologies/media as a tool for transformative environmental learning, and the possibilities for nurturing environmental sensitivity in students. Conceptual frameworks are introduced, such as ritual theory, creating narratives, and exploring experiences with art and time in nature.

Chapter II relates the methodology for this study. As a theoretical study, it provides a review of literature relevant in the field of Environmental Education, art and technology/media education, and holistic learning. Chapter III introduces dominant ideologies, including worldviews that direct traditional curriculum and learning. I explore Earth-centered worldviews as alternatives to the present norm, their relation to sensory learning, and the evolution of ecological identity development and consciousness in children and adolescents. Chapter IV is a comprehensive study of the reasons for art in environmental learning, while Chapter V looks at the role of technology and media in education and student learning. Both art and media/technologies are examined for their usefulness in teaching and learning environmental sensitivity and facilitating a re-imagining of one’s place in nature. Chapter VI builds on previous chapters to demonstrate some educational perspectives and paradigms that are consistent with a vision for transformative Environmental Education, such as environmental inquiry, place-based learning, holistic learning, and compassionate education. I trace the evolution of Environmental Education from a non-value laden discipline in science to the valued approach it can take in the arts. Chapter VI, Into the Field, is an illustrative chapter. Using the pedagogical model of nature writing as an example an art-integrated
practice for transformative environmental education. Chapter VIII provides response to a number of possible theoretical and practical objections to the main arguments as set forth by this thesis. It also concludes and synthesizes the main arguments of this thesis.

Figure 6: The Logging Tree (Multi Media/Eco-Art)  
R. York, K. Bridgers, & A. Bridgers, Toronto, ON
CHAPTER II: METHODOLOGY

The art of healing comes from nature, not from the physician; because the physician must start from nature, with an open mind. (Paracelsus, 1493-1541)

I. Introduction

This is a theoretical study whose purpose is to examine the integration of art, technologies and media for the purpose of Environmental Education based on a review of literature in the field of Environmental Education, art and media education, and holistic learning. It is also a constructivist study only so far as to provide examples of integrating art into the curriculum for environmental learning.

II. Theoretical Considerations

i. Literature Review

Literature review is defined as a systematic and interpretive survey of the literature on any given subject; it can allow for a synthesis, clarification and a collective mapping to locate and solve problems (Vogt, 1999). Due to the nature of my subject, which lends itself to a holistic vision for educational curricula, teaching, and learning, a collective mapping is necessary to uncover and synthesize the literature on the following topics: Environmental Education and inquiry based learning, arts, media and creativity in education, Earth-centered worldviews, and transformative learning theory.

For the purposes of this study, I am also using Karl E. Weick’s (1989) process of theory construction which is built around three components: “Problem of statement, thought trial, and selection criteria” (p. 156). For Weick, theory building is “portrayed as imagination disciplined by evolutionary processes” (p. 516). These processes are not deterministic, but involve free will, and thus involve a matter of choice. The complexities and scope of the study considers environmental, cultural, and social factors, including (but not limited by) a “self-conscious manipulation of the selection process” as a “Hallmark of the theory construction” (p. 523). Weick argues that theory is
often trivial because the “process of theory construction is hemmed in by methodological structures that favor validation rather than usefulness (p. 516). Theory, then, needs to consist of “trial and error thinking” and “disciplined imagination” that welcomes diversity into the problem “through trials and selection criteria that comprise that thinking” (p. 516). It may be viewed as a process, rather than a result or end product (a telos). Throughout this study I used imaginative freedom to explore multiple methodologies and diverse investigations, in part to honor the pluralism of multiple voices, which is consistent with an Earth-centered worldview. Accordingly, I embark on a collective mapping of the methodological issues to approach my subject. Using this understanding of theory construction and literary review, I describe a problem, establish a philosophical and pedagogical basis for my study, propose a position, and examine existing research to support this position.

ii. Towards a Methodology of Inclusiveness

I acknowledge Patti Lather’s (1986) idea of a mutually informative inquiry, where objective and subjective knowledge are interwoven, making true subjectivity impossible. In addition, I position myself with educational scholar Kathleen Gallagher (2008) who, in “The Art of Methodology, A Collaborative Science,” argues for abandoning “the pretense of objectivity, as many feminist researchers who have similarly sought to break down power differentials in the research process” (p.68). Acker et al. (1991) asserts that “objectivity is a form of male bias that pervades theory and research” (as cited in Gallagher, 2008, p. 68). Gallagher debunks the myth of value-neutral science and, by extension, social science. Marc Bekoff (2006) argues for “compassionate science” and is against the pretense of total scientific objectivity, in consideration of the fact that all scientific inquiry has in it some degree of inherited bias. More simply, You Can’t be Neutral on a Moving Train, as historian Howard Zinn (2002) states in the title of his work. “You.” The fields of the sociology and philosophy of science, originating with the work of Thomas
Kuhn, and others, underscore these points by showing that science is a social and political process, embedded in history and therefore subject to historical and subjective influences.

Education is no different. The existing system, as Orr (2004) and Berry (1988) point out, is highly anthropocentric and biased in favor of placing human interests above all others, which ironically undermines the interests of humanity by contributing to an unsustainable worldview that endangers the life systems of Earth upon which humanity depends. All academic work assumes a worldview. To describe a worldview as being either anthropocentric and biocentric is simplistic (as all binaries are), but it is useful to do so; it serves the practical purpose of delineating an essential truth regarding education: that much of it focuses only on human experience and, moreover, on a particular vein of human experience (one that excludes ancient and indigenous perspectives, and also manages to exclude the perspectives of young people, and also the voices of future generations adversely affected by climate change, and those who are economically disadvantaged by the current growth-oriented economic system). Needless to say, nonhuman voices and consideration of nonhuman interests are entirely absent from the current educational system, which effectively excludes the majority of sentient beings on this planet. This is extremely detrimental to most young people, who are naturally inclined (at an early age) to compassion and biophilia – viewing other animals, for instance, as friends (Noddings, 2006; Myers & Saunders, 2002). It is harmful for them to have these inclinations dismissed and consequently learn to repress their natural tendencies. Hearing many other voices – what Berry refers to simply as listening to the Earth – is crucial for Environmental Education. In fact, I adhere to Berry’s and Orr’s vision for education as it entails a strong expression of a ‘new story.’ Art may be viewed as just one of many cultural resources that can be employed in service to this vision. I believe that recognizing and incorporating these otherwise silent voices into this work is important, methodologically.

Postmodernism acknowledges the world of multiple realities (Gaudelius & Speirs, 2002)

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12 Physicist, historian and philosopher of science, Thomas Kuhn’s (1962) influential work, The Structure of Scientific Revolution, introduced the term ‘paradigm shift,’ which has become a part of our rhetoric.
and therefore speaks against a single truth or authorial voice. It advocates support of local knowledge and multiple voices. Educator Caroline Fusco (2008), in “‘Naked Truths’? Ethnographic Dilemmas of Doing Research on the Body in Social Space,” presents problems and suggests how to “contextualize, and empirically represent” without “fragmenting” the body (p. 160). Educators are able to shift the emphasis away from themselves and the fragmenting of knowledge and to seek inclusiveness. In this study I attempt to present an embodied approach to learning, in order to not fragment. I approach learning through a holistic transformative approach. This requires some deconstructing of former educational and cultural myths13 that, scholars argue, direct our teaching and learning (Orr, 2004). This thesis is informed by Orr’s (2004) criticisms of the educational system and his vision for education, which involves educating the whole person. It is no exaggeration to say that the school curriculum in North America is often disjointed and fragmented to such a degree that students cannot see the whole picture or relate their learning to the larger contexts and natural systems of which they are a part. However, the integration of environment into the arts curriculum, as suggested by this study, represents an inclusiveness that offers the opportunity to transform how we feel about the Earth and our relationship to it.

Hannah Arendt remarks: “it is not that we should attempt to transform the world, but how we think about and reflect upon it that is required” (as cited in Fusco, 2008, p. 209). Environmental Education is not so much about replacing one form of progressivism with another, as much as seeing the world through new eyes, in a way that is more inclusive, more just, more compassionate, and more sustainable. This shift in worldview is consistent with the expansion of our scientific knowledge of the workings of the Earth, the recognition that humans are animals of a kind (and not separate from or superior to other animals), our dependence on the life systems of Earth, and our role in changing it, as documented by Berry (1988, 2000), Orr (1999, 2003, 2004, 2005), and Louv

13 Orr (2004) writes that contemporary culture and the education system is “enshrined in myths (a common belief of a culture that is possibly fictional) that we accept without question,” such as: “ignorance is a solvable problem,” that we can manage the earth with technology and science, that we can restore what we dismantle, referring to the fragmented education system, and education is “a means for upward mobility and success” (pp. 8-12).
(2008, 2012), among others. These authors are critical of the role of the mass media and educational systems in promoting an unsustainable status quo. Thus we need a return to “our instinctive resources,” according to Berry (1988, p. 208); that is, we need a way of seeing that is typically hidden by an overly formal, rationalist approach. This idea aligns itself with Fusco’s presentation of the self-reflective text (p. 170), referring to the need to be self-critical, while working toward social change. This study proposes a social change in how we listen to one another and the voices of nature. Scientists describe ecological processes as non-linear; and in the same way the arts are non-linear. They are organic and mutable. This is a natural outcome of any truth-seeking study, insofar as truth is understood not as self-contained but limitless in its manifestations. A kind of “messy text” can naturally invite inclusiveness.

iii. The Messy Text

Caroline Fusco (2008) introduces us to the concept of the “messy text” as a possible outcome of poststructuralist research (p. 159), by which is meant a non-linear, layered approach incorporating multiple perspectives. Fusco articulates the dilemma of the proverbial search for “truth” and the struggle to construct “Readerly texts/Writerly’ texts” (p. 160), which has the advantage of enabling better communication with the reader, but the disadvantage of homogenizing and oversimplifying complex, diverse and multiple truths.

This is particularly relevant to my study insofar as I aim to consider multiple perspectives while writing a coherent and readable account of the issues involved, one that arrives at essential truths that need to be expressed. As I search to uncover ways to untangle the overarching myths of education (which as Orr (2004) relates directs our dominant worldviews and fragments our learning, and by extension our view of the self, the other, art, nature, environment, and learning), I find there are multiple possible processes and articulations of truths. Patti Lather (2008) proposes to “multiply perspectives toward an affirmation of life, and a means to knowledge without guarantee” (as cited in Fusco, 2008, p. 163). Along with Kathleen Gallagher (2008), who accounts for a layering approach to knowing, I agree that homogenizing traditional, anthropocentric ideas
must give way to a tapestry of ideas and previously suppressed voices. This is ideal for my study, which necessitates listening to multiple perspectives consistent with the interests of the Earth communities and their inhabitants. The Earth and local ecosystems are not simply living objects and materials (or what Heidegger called “standing reserve”) to be used for human purposes, to construct a technological utopian society; rather, they are the living systems of which we are a part. They have inherent value, not merely instrumental value, to use a distinction from environmental ethics. This “listening” is at the heart of Thomas Berry’s (2000) “new cosmology,” in which he proposes that we bring about the transition from an industrial age to an “Ecozoic” age – by which he means an age in which we are more cognizant and respectful of the life systems of Earth, and learn to live more sustainably.

In *The Dream of the Earth*, Berry (1988) writes that, at this point in our human history, we are experiencing a crisis because our “story” (society’s overarching narrative or cosmology) has become inadequate for “meeting the survival demands” of our present situation (p. xi). Our present story ignores the fact that environmental destruction is caused by our cultural mindset or the “cosmology of domination” which prescribes technological mastery over nature. Cosmologies, which involve the way in which we see the very fabric of reality and the narratives that issue from that seeing, are essential for interpreting our past and guiding us forward into the future. In Berry’s view, an evolution of ideas and cultures needs to be shaped towards a teleological vision designed to include diverse societies. It is a human project that takes the Earth into account. Ironically, Berry is adopting the same teleological evolutionary model that he finds wanting, in the case of technological progressivism; however, the critical difference is that his use of that evolutionary model is not homogenizing. It is open-ended and pluralistic: it proposes to incorporate the multiple perspectives and narratives of more ancient and sustainable cultures. It thus invites a kind of “messiness” in Lather’s sense of the word. The “new story” is really an amalgam of many old stories and relatively new scientific ways of looking at the world, unified by a cosmo-centric outlook.
A teleological vision for a more biocentric society is not articulated here in order to mold human beings in conformity to that ideal; rather, it is used heuristically in order to envision the possibility of a better educational system, one that is more attuned to the basic needs of students themselves and more consistent with worldviews in which ecological integrity and compassion are guiding ideals. Some of the ancient modes of human knowing are non-linear; conceptions of time and space are determined by natural cycles. Therefore, to consider something in a non-linear way is more in keeping with the systems thinking, which is a concept to which biologists refer (Capra, 1982; Bateson, 1972) when discussing nature’s processes. Exploring alternative cosmologies (fundamentally different conceptions of reality) is part of the “messiness” which my project invites, even at the expense of coherence.

Traditional theses follow the format of the written word only, and the style is exactingly uniform and one could argue, constraining. In my research, I refer to multiple artistic processes and non-linear approaches, such as media, visual art, and language arts, to understand certain ideas. Again, there cannot be any one answer, or single truth, especially as I open up my research to multiple voices. I would agree with Fusco (2008): multiple methodological processes are necessary. This is especially the case in terms of exploring what Berry (1988, 2000) would call our new Earth-human story. It is for this reason that I explore visual art as an expression, instead of relying solely on the written word, which risks running into the trap of placing all on the power onto certain symbols. Although I do examine the written word, in English language arts, I also look at examples of visual and media work. When I refer to “art” I am implying multiple arts, graphical, theatrical, written (narrative-based), and otherwise. In this vein, I use different perspectives and creations to shed light on the artwork and reflections of students.

iv. Against Reductionism and Centralization

Jonathan Z. Smith (1992), in his work, *To Take Place*, describes how Australian Aboriginals have a decentralized idea of the sacred, where every point is sacred because it is connected to a supernatural dimension termed “dreamtime.” Every location in the wilderness is a place where the
ancestors once walked and is thus sacred. In contrast, the European worldview, which still informs our culture and educational system, locates the sacred – that which is most important – in one place or space or modality. It is more centralized. Smith criticizes scholar of religion Mircea Eliade (1959/1987) for homogenizing religion and culture into universals by collapsing the aboriginals’ sense of the sacred – which was radically de-centralized and omnipresent – to the European concept of axis mundí (the center of the universe): in that conception one point is sacred and the rest profane. This was a methodological error on Eliade’s part. Aboriginals, upon closer examination, are decidedly de-centralized in their outlook: the sacred is everywhere, in all of nature, not at one central point. A related element in Smith’s work, which corresponds to the ideas in this study, is his critique of one-way mapping, or collapsing of traditions, as Eliade is charged with doing. Smith maintains a that multiplicity of worldviews is viable, rejecting the idea of a hierarchical evolution from “primitive” to “civilized” which has privileged a dualistic cosmology (e.g., Descartes’ dualism of mind and body which I address in Chapter III). Environmental and eco-feminist authors (Ruether, 1992; Hathaway & Boff, 2009) have argued that hierarchical Cartesian thinking occurs at the expense of the natural systems of the Earth and sustainable Indigenous cultures. Thus the categories needed for a study that seeks to avoid reductionism should allow space for these multiple and not always entirely consistent perspectives.

This becomes important in adopting a methodology that is inclusive and open-ended, one which acknowledges there are many ways of knowing apart from the written word, which itself has become a centralized focal point for the aggregation of power, privileging those who use the written word over those who do not, according to postmodern hermeneutics (Foucault, 1984; Derrida 1978). As Smith shows, the written word has also been used to demarcate (or map) the sacred and profane, and to violently collapse cultural meanings into one another. I acknowledge a knowing that can also come from artistic expression, through examples in media, visual arts, or poetry. A multi-media approach to knowledge and wisdom is more inclusive, and allows for multiple voices. In order to locate the sacred in the everyday life we need to challenge the “formal
historical record” and this requires a “critique of institutions and practices responsible for sustaining such forms of ontological sedimentation” (as cited in Dillbough, 2008, p. 210).

My aim is to attempt to bring into the process of learning the multiple perspectives that go into creating art. Within certain communities there exists the phenomenon of the “authorship of representation” whereby frequently marginalized voices remain unheard. Young people often feel disregarded when they voice their concerns and feelings about the environment. Revisionist history sees the local and the individual as important, in contrast to the traditional historical method that lends importance only to those in positions of political power. Again, in my methodology, I consider the individual lives and the marginalized “voices of the Earth” (Berry, 1988). Fusco (2008) uses Foucault, Fox and other poststructuralist thinkers to demonstrate that one “single overarching truth” does not exist, but rather that “truth claims about the social world are substantiated and mediated in, and through, particular cultural discourses” (p. 161). I believe this supports an emphasis on the multiple discourses I suggest in approaching art for Environmental Education and for the necessity for open-endedness and messy text in discussing Environmental Education; a more open style is consistent with an emancipatory vision of a just and sustainable and compassionate society, and art is a means for expressing this inclusiveness and multiplicity.

III. Practical Considerations

With ethical approval from University of Toronto and the Toronto District School Board (TDSB)(Appendix A), I was able to observe one second grade class, one sixth grade class, and one twelfth grade class over the period of March to May, 2012, in order to collect examples of their work and reflections which could be used in this theoretical study. I visited each class for a minimum of three visits (the twelfth grade class for instance), and up to twelve visits (the sixth and second grade classes). Each of the classes were chosen on the basis of their instructors’ interest in exploring art and media as a vehicle for Environmental Education, and while the second and sixth grade classes were chosen from the Toronto District School Board, the twelfth grade class was
from a private high school, Toronto Prep. The second and sixth grade classes were both located at Hillcrest Community School in my neighbourhood and I knew all of the children in both the classes, giving the students a feeling comfort and ease at my presence. During the period of my observation, the second grade class (with 18 students) was exploring an animal of their choice through storytelling and art. The sixth grade class (with 19 students) was learning about biodiversity and the teacher instructed the students to pick their own subject and create their own art to express their learning. The twelfth grade class (with 18 students) was engaged in an English writing assignment that involved writing from their local environment and nature. All three classes and curriculum units involved an inquiry based exploratory learning experience with art and nature.

My observation of the sixth grade class was passive, as I took notes and photographs, whereas my observation of the second grade class and the twelfth grade class was participatory. In the second grade class, I led the children in part of the unit as they created their individual artwork in representing their animal of choice. My observation of the twelfth grade class was both participatory and passive, as I led the students with their teacher out of doors, and gave some instruction for nature writing. As the students continued to do nature writing, my observation became passive, and I later collected and analyzed their narratives, artistic representations of nature and their images. Observation took place during regular classroom time and did not interfere with the regular curriculum requirements or activities of the class. The classes (two, six, twelve) and correlating age groups (seven years, eleven years, and seventeen years respectively) were chosen to provide examples for understanding how students develop and express eco-sensitivity and connections to nature in primary, junior, and senior grades, as they correlate with middle childhood, and adolescent identity development.

All examples of student work or personal communication with students or educators are represented in this study only with written consent of the student/parental/individual. Other examples in this study, such as writing poetry, taking photographs and, in some cases, creating
multi media nature art with my daughters, come from my own personal artistic practices over the last four years.

IV. Summary

This chapter presents the methodology used for this study, which is theory based. I present the theoretical considerations (inclusiveness and approach to text). The next chapter, Chapter III, examines the existing worldviews and paradigms that affect education, identity development and the possibilities of shaping an ecological identity.
Figure 7: Magnolia Tree in Toronto
R. York, Toronto, ON
CHAPTER III: WORLDVIEW & PARADIGMS: ECOLOGY & IDENTITY DEVELOPMENT

_All things change; nothing perishes. (Ovid, 43 BC-17 CE)_

I. Shifting Worldviews

There is a widespread consensus among environmental thinkers that our relationship to the Earth community and corresponding worldviews that determine this relationship need to fundamentally change (Hathaway & Boff, 2009; Berry, 1988; O’Sullivan, 1999; Clarke, 2012; Kagan, 2011). This thesis demonstrates that this shift in worldviews and our collective consciousness into a more biocentric or cosmocentric way of being in the world is complex and can be realized in more than one way. The arts, as a multifaceted way of experience and presence, is a perfect vehicle for challenging existing worldviews, and allows opportunities for students to envision a connection with nature, and adopt environmental sensitivity. In this vein, I investigate existing worldviews and explore how the arts can initiate transformative ways of thinking and learning that would support environmental learning.

i. The Body/Mind Split

The dominant paradigm of modern industrial civilization is an anthropocentric or human-centered worldview, which privileges the human experience and dominance over the natural world (Merchant, 1990; O’Sullivan, 1999; Scharper, 2006, p. 36). Anthropocentric thinking can be defined as the belief that only humans have value, and everything else is important only insofar as it serves human interests (Hathaway & Boff, 2009). The basic assumptions of capitalism and industrial civilization (e.g. technological progressivism, the superiority of industrial as compared to non-industrial cultures, the paradigm of limitless economic growth as the highest good) originated in the West but are now globalized. These inherited and often unquestioned assumptions shape the educational system. This paradigm has been described as “rational humanism,” “zero-sum humanism” (Livingston, 2002), and also as “enlightenment faith in progress through technology” (Schmidt, 2008, p. 7). This worldview, also referred to as “the cosmology of
domination” (Hathaway & Boff, 2009), is associated with ever-increasing environmental problems, since it views the natural world as something to be used up for human purposes and, when problems arise, suggests technological fixes which often turn out to be inadequate, or end up causing new problems.

While inclusive models of humanism recognize that human survival depends on sustainable ‘natural’ environments, those models continue to place humanity at the nucleus of meaning and to separate humans from the natural world. Anthropocentrism of this sort separates us from the biotic community, directing our actions and harming the Earth in a physical way (pollution, climate change). It also affects us psychologically, which is why people feel separate from nature and their own environments. It has been suggested that this separation in our minds may have originated from the “Newtonian/Cartesian synthesis” (Bai, 2009; O’Sullivan, 1999), a philosophy from the 17th century that views the universe as a mechanical system and rises “from the physical sciences, particularly physics” (O’Sullivan, 1999, p. 85). In the Newtonian/Cartesian synthesis, all of nonhuman nature is merely mechanical, inert, to be used instrumentally by human beings, who alone are worthy by virtue of their capacity for reason, thought and language; the other animals are thought to lack these abilities. Animal ethology, in recent decades, has disproved that conceit, but this anthropocentric manner of thinking is still very much dominant, and the assumption of human superiorism has been used to justify the industrial exploitation of nature and nonhuman animals on a massive and unprecedented scale.

14 Sometimes I refer to ‘humans’ rather than ‘people’ because the field of biology known as animal ethology has demonstrated that many nonhuman animals possess qualities by virtue of which they could reasonably be termed ‘people.’

15 I would distinguish zero-sum humanism anthropocentrism from the type of anthropocentrism that might be consistent with sustainability, because it recognizes that the good of humanity depends on greater respect for nature and animals. In environmental ethics, the idea that respect for nature and other animals is valuable insofar as it helps humanity is often termed “indirect rights.” The animal has rights insofar as it contributes to human wellbeing, according to an indirect rights ethic. This can be distinguished from a direct rights ethic in which the nonhuman animal has rights independent of human valuation.
The instrumental use of nature and animals occurred prior to the 17th century, but with the mechanistic atomism of the European Enlightenment, arising from science but informing all areas of learning, a “social imaginary” was created, according to Charles Taylor (2004). This imaginary has had a profound influence on the world to this day as it provides the foundation for “the cosmology of domination” (Hathaway & Boff, 2009). This worldview sees nature as a mechanistic series of causes and effects and views the natural environment as something to be dissected and used instrumentally for human purposes. It rejects any intrinsic value of nature or nonhuman animals, and hierarchically favours the disembodied “mind” over “body,” where human beings alone are thought to possess minds and souls and value, and the rest of nature is thought to lack these things. Eco-feminist writer Carolyn Merchant (1990) represents this Cartesian dualism as an oppressive hierarchy over the natural world, women, and nonhuman animals by men. Eco-feminist Carol J. Adams (2010) applies these same ideas, in greater detail, to nonhuman animals.

Eco-feminist perspectives are consistent with a non-hierarchical approach to learning, and offer a critique of the mind/body split. Some of them (Adams in particular) also adopt the feminist ethic of care, as distinct from the traditional emphasis on reason, which is consistent with a rights theory. Eco-feminism challenges patriarchal domination over the nature and calls for inclusiveness and the feminine principle of creativity (Shiva, 1989). Feminist activist Vandana Shiva (1989) claims that females have a close connection to nature because they too give and create life, and in many places in the world are interacting daily with the body of the Earth as they collect food and care for their children. Anthropocentrism has been aligned with patriarchy (Hathaway & Boff, 2009); therefore, eco-feminism is an important approach to environmental learning that acknowledges Earth-centered worldviews and the principle for embodied learning, creativity, and care.

According to environmental scholar Hensoon Bai (2009), it was the Newtonian-Cartesian approach that separated us from the animism of the Earth community and the ‘sensuousness’ of the natural world. The practical implications of Cartesian dualism have been to cut us off from direct
sensory experiences of the environment, of which we are a part, thus cutting us off from ourselves. The Newtonian-Cartesian worldview sets the human body apart from nature, as something above it. In this view, humans are not seen as animals. Darwinism, if properly understood, can act as a corrective to this notion of human superiority, by identifying humans as animals of a kind, not “higher or lower” than other animals, according to Darwin (Rachels, 1987). If misunderstood, Darwinism passes on hierarchical thinking in the form of evolutionism, a false view of evolution that Darwin himself rejected, which views humans hierarchically as the apex of evolved life forms. Evolutionary theory in its truest form is non-hierarchical and debunks anthropocentrism; but the moral implications of Darwinism were never fully adopted by our society (Rachels, 1987), which continues to view non-human nature and animals mechanistically to be used instrumentally. The mechanistic view of the world set the stage for much that was to follow, in particular for industrialization, which is based upon the instrumental use of nature and animals on a vast scale, for the material benefit of humans (York, 2009). It has also led to unequalled human population growth and consumption to the point that we are now in the midst of a mass extinction, and all of life on Earth is threatened by anthropogenic climate change. It is therefore important to deconstruct the assumptions that have led us to this point, and transform the educational system accordingly.

The Newtonian-Cartesian ‘cosmology of domination’ has had such an effect on education that environmentally conscious scholars have been unsuccessful in bringing the cognitive learning of science into alliance with biocentric thinking (Bateson, 1972; O’Sullivan, 1999, p. 55). O’Sullivan relates that this is the case because cognitive science still sees the human mind and body as separate, even though there is now ample empirical evidence to the contrary. It also, for the most part, views nonhuman animals as inferior and expendable, simply because they are not the same species as us, and even though there is now empirical evidence that other animals have complex emotional and cognitive and even linguistic abilities (Bekoff, 2008). This idea of separation exists in parallel with and extends to our understanding of the Earth.
In contradistinction to Cartesian dualism’s atomism, the philosophy and ethic known as biocentrism views humanity as part of the natural world and rejects a hierarchical anthropocentric cosmology, recognizing instead the interrelatedness of all living things. It is very consistent with Albert Schweitzer’s (1936) ethic called “reverence of life,” which maintains that all living things possess a “will to live” that should be respected by us. Biocentrism may be expressed as the axiom that when we are separate from one, we are separate from the other, just as when we compartmentalize the self, we compartmentalize the world and our learning. It is an ethic or worldview predicated on the interrelatedness of living things that co-exist on the thin strip of water and air surrounding this planet, known as the biosphere, though theoretically it could apply to any living ecosystems in the universe (and there is a high mathematical probability that billions of other worlds exist where some form of life flourishes). Thomas Berry (1988, 2000) is one of the main proponents of cosmocentrism, which maintains that the natural state of the universe needs to be acknowledged as a part of our consciousness, and advocates reforms to the educational system to help facilitate the transformation from anthropocentrism to a higher good for the Earth and humanity.

While the modern educational system is fragmented into subjects and disciplines (Orr, 2004; Miller, 2008), a biocentric worldview, reflected in an integrated learning environment, tends away from compartmentalization and towards what might be called a holistic and compassionate educational system. Integrating art and environment into education reflects this holistic approach and attempts to re-align learning with the natural world. This pedagogical approach recognizes that we are all in a state of “interconnectedness” and that “everything hangs together; each living organism is connected and dependent upon others to grow and maintain itself; a living phenomenon is understood only in relation to other phenomena in larger ecosystems” (Nakagawa, 2000, p. 8). The interconnectedness of all living things is apparent through the some expression of art and narrative. Creating or experiencing art can bring a feeling of “interconnectedness of reality and a mysterious unity in the universe” (Miller, 2008, p. 17). Interconnectedness is the fundamental
nature of all things, as all things are related and whole. This relates to the work of ecologist and psychologist Gregory Bateson (1972). In *Steps to an Ecology of Mind*, Bateson defines the processes of nature, of which humans are a constituent part, as the “patterns that connect.” This phrase refers to the relationship between elements that impact and shift and change one another in a dynamic interactive process that makes up the whole natural web of life. As an ecologist, Bateson demonstrates how human beings are a part of the process of the world, and perhaps this is why young children are more responsive to the connections they feel to nature and animals, intuitively and biologically. Ecologist Fritjof Capra (2005) also notes that these patterns, inherent to all living systems, are naturally transferable to teaching the arts, because students learn through patterns and mapping.

Art is a conveyer of ideas but, more importantly, it is a process whereby those who create it can subjectively engage with difficult and important issues, such as climate change, which are otherwise hard to grasp and articulate. Art can thus be an expression of radical discontent, but also provide the vehicle for expressions of hope. Clarke (2012) writes that to distance ourselves from the natural world is a “lonely and finite course” that lacks “vitality, harmony, and comfort that comes from being with others than ourselves” (p. 5). I am suggesting that art can be used in education to bridge that distance by putting students in touch with their feelings. Art educator Mark Graham (2009) in his essay, “On the Fringe of Nirvana: Aesthetic Places and The Art Classroom,” demonstrates these aspects of learning are possible in teaching the arts.

Another reason we feel separated from nature is the continuing loss of wild and natural places and the growth of urban centers. Clarke (2012) reminds us that since 2010 (and possibly as early as 2006 (Stefanovic, 2012)), and for the first time in human history, more human beings around the world are living in cities than in rural areas, and we have truly become a “human-centric” “urban species” (p. 1). This shift in our physical landscape has also shifted our inner landscapes, often in adverse ways, by narrowing the scope of our realities to human-made structures. Humans did not evolve in cities; they evolved in the wilderness and this presents the
question of whether or not our psyches are better adapted to natural environments. Living in cities changes how we orient ourselves with respect to the natural world and our separation from it often results in mental and physical health problems. The ‘urban narrative’ (the worldview created by living in cities) tends to promote technocratic learning, which further distances us from the Earth and living systems (Clarke, 2012, p. 1). Environmental and place-based educators recognize that we need to bring nature back into the classroom or, more pointedly, bring the classroom into alignment with nature, in creative ways, such as schoolyard excursions, map making, and a variety of integrated environmental programs linking learning and the world (Sobel, 2005; Henley & Peavey, 2006; Chiarotto, 2011).

Art becomes even more important for bridging the gap between nature and culture as we move into a more urban world and our natural spaces dwindle. Art is a basic activity for humans, one that allows for creativity. It is no coincidence that many children’s drawings depict animals as friends, along with trees, the sun, and blades of grass. The natural inclination to depict nature and animals in art is strong, due to our innate biophilia, and this inclination needs to be actualized in the classroom. In fact, research shows that up until the age of seven children dream more of animals more than any other time in their lives (Domhoff, 1999), demonstrating a deep connection to animals in their subconscious. Encouraging simple drawing natural scenes can benefit students enormously.

Most children feel separate from nature, as demonstrated by Luigina Mortari’s (1997) study “Children’s Ideas of Nature: The Social Construction of ‘Nature Set.’” Mortari’s study took place in Italy, but her findings seem common to children in most Westernized cultures. This is particularly true of those living in cities and can be seen globally since nature tends to be something existing outside of their everyday urban experience. The study conducted with children and youth in Italy demonstrated that most feel they are separate from nature, but the youth, in particular, honored nature as something important. Furthermore, only the younger children, those who were seven and eight, felt that humans were a part of nature (Mortari, 1997). In support of this
study, and in my own recent experiences talking with students for the purposes of this study, I found that the older students (sixth and twelfth graders) felt nature was something beautiful and in some cases “sacred;” yet most did not feel it could be experienced from an urban context. Some of the older students with whom I spoke related that nature was “something away from the city” and “ruined by people,” demonstrating their feelings of alienation and disappointment. The eleven and twelve-year-olds did not express alienation or concern, but they felt nature was something of which they were not a part, and that wild places, such as the lake (though only a mile away from their school), were inaccessible to them. One student summarized his feelings in this way: “It’s close, but it’s so far. Nature is something you go to see. It’s not around here” (Personal communication, March 22, 2012). Another sixth grade student articulated how students are hearing about how they are connected to nature, but they are not experiencing that connection: “Bill Nye the science guys says we’re all connected, but it doesn’t feel that way” (Personal communication, March 22, 2012).

Orr (2004) argues that education is failing our students because it “emphasizes theories, not values; abstraction rather than consciousness” (p. 8); most students in urban classrooms are not going outside and engaging in their natural environments on a regular basis. Interestingly, in the second grade class, 14 of the 18 students articulated feelings of being close to nature or being a part of nature. One student expressed her feelings of kinship with nature by drawing a picture of an Oak leaf. She states: “We all come from a tiny seed” (see Figure 8).

Figure 8: TDSB student, 2nd grade
Another of the second grade students announced: “animals are a part of my family” (Personal communication, May 10, 2012). This connection to nature at an early age may be in part because young students are more open to the natural stimuli of their environments, often engaging in story-telling, play, art, and learning that affirms their love for and connection to animals and nature.

Love of the natural world and nonhuman animals, as scholar Kimberley Patton (2006) suggests, is something with which we are born. It is part of human nature but then repressed through social conditioning, resulting in cognitive dissonance. Wilson’s (1984) term biophilia means, literally, a love for the natural world. However, this love and connection to nature is something we are taught to suppress and reject for the sake of conforming to anthropocentric cultural trends (Suzuki, 1997; Berry, 1988). The companionship that comes from feeling connected to other human beings and to the whole Earth community is an essential part of what it means to be human; as such, it should be an important part of our educational system. Many believe we can bridge the gap between our cultural identity and “being in the world” with other beings (Sauvé, 2009; Naess, 1989).

ii. Finding Connections

In contradistinction to Cartesian reduction of non-human animals is the field known as compassionate education, which seeks to develop an awareness of the lives of other animals. It views other animals’ interests as consistent with human interests, providing links to help us, as compassionate citizens, care for the natural world (Noddings, 2005; Myers & Saunders, 2002). Psychologically, other animals have been identified as liminal figures within human subjectivity, evidence for which exists in ancient human myths and art. Our consciousness of them is deeply embedded in our subjective worlds and in our imaginations, because they represent the link between the self and the natural world. They are individuals like us (because, of course, we too are

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16 Examples throughout this thesis refer to case studies conducted between March and May 2012, with ethics approval from University of Toronto and Toronto District School Board (TDSB) for this study.

17 Most children’s stories use animal characters to teach basic learning concepts, such as classification and counting (Kahn, Jr., 1997).
animals of a kind), but they are also part of the natural world from which humanity has largely separated itself.

Educators, E.O. Myers and C.D. Saunders (2002), in “Animals as Links toward Developing Caring Relationships with the Natural World,” demonstrate that caring for animals provides children with a way to develop an ethic of care toward animals and with nature in general (p.160). Myers and Saunders show how developing relationships with and caring for animals can help children begin to care for individual beings overall, and establishes core values that support a child’s wellbeing. We are in need of animals, psychologically and emotionally, on a fundamental level. To reduce them to mere things or objects for industrial use and consumption is not only to de-animalize them; it also has the effect of de-humanizing us. If the feeling of being separate from nature and nonhuman animals is arguably something that is learned and socially conditioned, as the advocates of biocentrism maintain, then educators are presented with the challenge of nurturing the natural connection to the living world and nonhuman animals, and, at the same time, trying to correct the dominant social conditioning of an anthropocentric society.

Treating education on climate change and the environmental crisis as something to be avoided may be rightly viewed as irresponsible, given the magnitude of the environmentally related crises facing humanity. That is why it is important for Environmental Education to reach students. Using art as a vehicle for Environmental Education to nurture environmental sensitivity in students is one way for this to happen. Berry (1988) and Orr (2004) advocate the use of educational institutions to advance Environmental Education. Education may be viewed as a cultural resource, integral to a healthy functioning society since the education process is, in large part, a process whereby students learn how to be responsible and compassionate citizens. It may reasonably be argued that one cannot be a responsible citizen without acknowledging the necessity of abiding by the moral imperative of mitigating climate change. However, most educators agree that learning about complex environmental issues is only appropriate for older students and that young children need time to learn to love the Earth (Chiarotto, 2011). While many post secondary institutions
acknowledge this, and are trying to “go green” and offer more Environmental Education courses, a large number of elementary, middle and secondary schools are adopting Eco-School challenges, which are aimed reducing waste and raising ecological consciousness. Their response is laudable but even at the “greenest” schools efforts have been insufficient to the task. A more comprehensive effort is needed, one that re-imagines education from the ground up, and transforms it fundamentally, across all disciplines.

Taking students outside and giving them time and space to observe, think, reflect, and create a response to nature has a positive effect on their emotional wellbeing and promotes a feeling of connection with nature and animals. The *Natural Curiosity: A Teacher’s Resource Handbook* demonstrates how learning out of doors is more effective than staying in the classroom (Chairotto, 2011). This is consistent with Orr’s (2004) proposal for re-defining education and making our places of learning and the way that we learn consistent with the vision for environmental learning (p. 14). In my fifteen years of teaching experience leading English secondary and college students, those who have the opportunity to walk outside, engage in the natural world, inquire, create and reflect upon that creation are more interested and more engaged in their environments. One student in the second grade class I visited for the purposes of this study wrote the following poem in response to a walk around her schoolyard:

I am a tree
The snow falls on my branches
I see the geese flying south
Everything is covered in a blanket of white
My red leaves have fallen
And my branches are brown and bare
I will stand here and grow in the snow
To see my friends again this spring. (March, 2012)
This beautiful poem honours the interconnectedness of the tree, the bird, and the girl who created the poem in the context of the natural world. The student related to me that creating her poem affirmed her feeling of connection with the tree. Imagining herself to be a part of nature is important for her growth, and also for society, which is in need of students who can think biocentrically, and cosmocentrically (as Berry (2000) relates), and help to transform their local places. Children can imagine and see the depths of the natural world by simply seeing a tree in an urban concrete schoolyard and birds flying across the sky. Figure 9 depicts a work of art from another second grade student in the classroom I visited. The work of art expresses what the student feels it would be like to be a tree:

![Image of a tree drawing with text: Trees: delicate, I am a tree, So green and fresh, I blow through the wind, I dance with glee, I am a tree.]

Figure 9: I am a Tree, (TDSB student, 2nd Grade)

Educational experiences can nurture biocentric, and compassionate worldviews. This student imagines herself to be a tree, and dancing with the wind. It is elegant and beautiful. One way to nurture empathy for life is to imagine being in another’s shoes, and this student does so with her picture and her poem. She wants to feel “glee” as a tree. One educator related that her students who
took the time to create poems and imagine themselves as the living world, were also the most compassionate towards others and nature in general (Personal communication, May, 10, 2012).

An elementary school teacher related that every spring she takes her students to a farm sanctuary (a place where farmed animals are rescued and allowed to live out their days and die naturally):

You can’t go see animals anymore – they are caged up and traumatized. This way the student experience animals the way they should be – free and happy, with space and dirt. It actually makes them think about food, and how animals have feelings and personalities. We take a lot of photos and then write stories and paint pictures about our feelings and experiences. It’s the most popular thing we do all year. (Personal communication, March 10, 2012)

Figure 10 depicts a work of art created together by two second grade students (my daughter and her friend), to remember the experience they shared at a farm and to celebrate their friendship:

![Figure 10: Farm Friends, (TDSB students, 2nd grade)](image)

Figure 10: Farm Friends, (TDSB students, 2nd grade)
Direct experience, time outside, and creating art that expresses these deep connections can transform students’ worldviews and, by extension, the views of society.

iii. A Return to Our Senses

One approach to biocentric and cosmocentric learning is through direct experiences with nature and art or, more precisely, what may be called a sensory or embodied approach to learning. This kind of learning can help bridge the gap between the mind and the body, because it is predicated on the recognition of the interrelatedness and unity. The sensory approach to learning is central to a holistic vision for education, and relevant for environmental learning. Students can inquire into and consider their local environments through the body or the sensory experiences of touch, smell, sight and sound. While we may interpret things differently, we usually have the same sensory information available to us (Tuan, 1974), because of a common physiology, due to the fact that all human beings alive today descended from the same genetic pool. Although currently divergent and spread across the world, and inheritors of vastly diverse cultures, all human beings nonetheless share a common evolutionary origin. For this reason, the principles of sensory learning may be thought of as universally applicable. It is through our senses that we first perceive the world, and through our brains that we process sensory data. Every child comes into this world, learning through touch, smell, taste, hearing and vision. Gradually, children establish connections and attach meanings which are, to a large extent, socially and culturally conditioned; but the primary experience itself exists prior to social, historical and cultural influences, which may serve to make such experiences intelligible by describing and expressing them through language and symbols. Our first introduction to the world is through our senses, which provide immediate information about our environments and allow us to adapt to them. This visceral and immediate connection to nature, then, can be viewed as a primary sensory relationship that we may learn to repress as we age, due to social influences.  

18 Freud explains that for human civilization to exist it is necessary to collectively view ourselves as apart from the natural world, to some degree, and to repress naturally occurring instinctual desires (Freud, 1926).
Exploratory learning, through the senses (touch, taste, sound, sight and smell) can be developed through the arts, which provide an important way to maintain an elemental connection to nature. It is also important for student learning. As adults, humans have highly developed abilities for symbolic thought and imagination, but we are still very much the products of our bodies and sensory perceptions. Sensory learning involves active participation and is often intuitive.

The study of how we think and feel and sense and learn is beyond the scope of this thesis, as it would require a detailed exploration of epistemology, sociology, and human psychology. Suffice it to say that children learn best when their “whole person” is engaged in learning. “Sensory learning” (as we may call it, to distinguish it from learning that fails to include important sensory stimuli) is an important part of Environmental Education, and part of the larger social and political process of shifting our society towards what Thomas Berry (2000) refers to as “the new story” that is necessary for the transformation of society to a more sustainable equilibrium with nature. The ‘new story’ is a construction of cosmocentric cosmology: a way of the seeing humanity as part of the living universe, and not separate from or above it. Sensory learning has the potential to make the connection by engaging students, at a more fundamental level than offered by traditional learning methods, through new sensory stimuli from the natural world. Typically, intuitive sensory learning has been very limited in the classroom, because of the focus on the written word, but the paradigm of sensory learning seeks to overcome that limitation. It is a vital ingredient in successful Environmental Education.

Educators have the unique opportunity to direct the cultural imaginaries of their students and challenge the very societal norms and practices that are antithetical to sustainable living. The

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This results in a neurosis, the result of the internal conflict between different parts of the psyche. In the modern age, this distancing from nature has manifested itself as industrialization, increasing reliance on technology, consumerism, and the creation of virtual worlds through which to satisfy instinctual desires and the need for a sense of community. It has also resulted in unprecedented and life-threatening environmental crises. EE seeks to remedy that fundamental sense of disconnection from nature, which the field of eco-psychology says is learned at an early age, and is reinforced through the rest of life through the process that Peter Berger (1967) identifies as world construction and maintenance, involving externalization, internalization, reification, and objectification.
field of Environmental Education is active and expanding, but this study suggests that in order to
discover new stories, or worldviews, we need to engage in new cultural imaginaries and an
integrated approach to environmental learning. As David Orr (2005) suggests, education is more
than just “mastery of subject matter;” it is about “making connections between head, hand, heart,
and cultivation of the capacity to discern systems” (p. xi). It involves a transformation from the
mechanistic and dualistic thinking to biocentrism (holism) by bringing the natural world into the
curriculum, teaching and learning.

iv. Deep Ecology, Biocentrism, Cosmocentrism, and Traditional Aboriginal
Knowledge

Countering the anthropocentric and technologic worldviews is an Earth-centered
worldview (Berry, 1988; Knapp, 1999), which is intellectually grounded, in large part, in the deep
ethic and philosophy that advances a holistic, biocentric worldview, one that sees humanity as part
of the natural world, and not separate from it; it is predicated, in part, on Heidegger’s rejection of a
subject-object dichotomy that would place humanity at odds with nature. Thus, to poison the air,
water, and environment is to poison ourselves. More importantly, deep ecology does not value
nonhuman nature simply because we depend on it: nature also has an intrinsic value. Deep ecology
represents an explicit rejection of the use of instrumental reason and utilitarian calculations which
place human interests above all others. It articulates a cosmology in which nature is given priority
because it represents a good in its own right.

The idea of biocentrism (which is essentially the equivalent of Naess’ (1989) eco-centrism)
is often aligned with Traditional Aboriginal Knowledge (TAK), sometimes also called Traditional
Environmental Knowledge (TEK). Different aboriginal groups will necessarily have different
worldviews, and, according to anthropologist Marshall Sahlins (1995), to collapse them into one
risks doing injury to them all. His argument is against what has been called pan-nativism or pan-
Indianism, and TAK (or TEK) would seem to be an example of that if it claims to represent the
views of all aboriginal peoples. Nonetheless, one can still reasonably maintain that many aboriginal peoples employ a biocentric worldview. This worldview sees the natural landscape and its waterways as living entities, existing in a familial relationship with humanity and animals. Berry (1989, 2000) draws on this kind of imagery to make his argument when he refers to non-biological elements in nature as living (Naess, 1989, p. 405).

Thomas Berry (2000) presents a cosmology that sees the unity of the universe and all within as sacred. He also addresses our anthropocentric ways of thinking in *The Dream of the Earth*; he states such ways are a “violation of the Earth’s most sacred aspects” (p. 209). Attempting to provide a remedy, he adds that a “shamanic” or spiritual insight from traditional aboriginal cultures is important to help us understand our relationship with the Earth and with all living creatures (Berry, 2000, p. 209). He also comments that aboriginal views of nonhuman animals as spiritual brothers and sisters are important for the same reason (Waldau & Patton, 2006). In other words, we need to look at ourselves as part of a natural system in order to adopt sustainable practices. Berry maintains that aboriginal peoples were taught to respect the Earth, but that that kind of teaching is largely absent today. Native American filmmaker and activist Danny Beaton shared his worldview when speaking to a group of students at the University of Toronto in November, 2013: “The sun, the stars, the animals, the plants, and all of nature: this is my brother and my sister.” This worldview places all beings in the web of life without hierarchies, and seeks to evoke a sense of love, responsibility, care and compassion for the world in which we live.

The arts provide multiple possibilities to explore the pluralism of differing worldviews and non-hierarchical relationships. For instance, a twelfth grade student in the classroom I visited shared an observation he made and a narrative he wrote describing ants going up and down a tree trunk:

I never paid any attention to them before, but looking from this angle, seeing them this way, I am reminded how they work together to get things done. They are individuals, like us, but a single species moving up and down together. In some ways we do that – go
about our work, schools, doing things, together. But it doesn’t seem so complicated if you look at life this way. What the world must look like from the trunk of a tree? Maybe our lives are like that too. The streets are like trees. It makes you wonder. (March, 2012)

This student demonstrates that using technology, in this case a video, to observe and then reflect with writing, gave him the ability to engage with and then re-consider nature in a way previously unseen. Another student in the same class, who participated in the nature writing exercise, stated that art helped her to see the Earth from a new perspective:

Watching the sun on the tree branches, and the wind in the leaves, it’s all so beautiful, and when I write a poem or paint I really see how it makes me feel. I suppose this is what it means to feel the spirit of a place. It’s something you can’t explain with science. Nature is more than that. It’s in your heart. (Personal communication, April 4, 2012)

Thus we could say that Earth-centered worldviews involve honoring the mysteries and spirit of the universe and being grateful for the life it brings.

Gregory Cajete (1994) articulates the deep spiritual grounding found in aboriginal cultures in his work, *Look to the Mountain: An Ecology of Indigenous Education*. Basic understanding begins with exploring how things happen. Observing how things happen in the natural world is the basis for some of the most ancient and spiritually profound teachings of Indigenous cultures. Nature is the first teacher. Learning through, in, and about nature enhances our capacity to see things (as cited in Chiarotto, 2011, p. 13). Insight into aboriginal ways of knowing and feeling about the natural world is important for transforming technocratic philosophies that are common in education today. Technocratic philosophy, which is part of our anthropocentric model of progress and education, may be contrasted with the aboriginal worldview and understanding of being in the world. The technocratic emphasis is upon growth, assessment, and control, in contrast to the aboriginal emphasis on creativity, quality, and spirituality (Hutchinson, 1998). Introducing alternate ways of knowing is the basis for exploring nature and our place in the nature of things.
Scholars note that aboriginal cultures did not separate life and art. They were one and the same and equally important. Art making, within TAK, is an “inter-relational transformation, a dance of great magnitude between people, processes, and things themselves” (Gradle, 2007a, p. 83). The ecological connection and understanding of the world extended naturally into the aboriginal ways of making art; it was, for aboriginal peoples, a means for communicating with their ancestors and their place in the nature of things. The physical and spiritual realms came together during ceremonies of dance, songs, stories, drawings; the arts were central to community ritual and life, but they were also integral to communicating with the Earth itself as a living entity (Beaton, 2013). The arts linked the past and present, the old and the young, the spirit and the self, nature and people alike. Berry (1988) argues that many ancient and aboriginal peoples had cosmologies better adapted to the continuation of life on Earth, and that industrial societies could learn much from them in this regard. Education for sustainability, which he prescribes in order to help us move into the “Ecological Age,” (or Ecozoic Era) is a pedagogy that originates in an Earth-centered worldview; it needs to be pervasive across the curriculum, and should not restricted to environmental studies (p. 36).

Sam Crowell (2002) articulates in “The Spiritual Journey of an Educator” that our inner and outer lives shape who we are and who we become. We are “meant to live in two identities at once – one leading us outward toward action in the world around us; the other calling us to open ourselves to the world within us” (Needleman, as cited in Crowell, 2002, pp. 13-14). This world within us is the main focus that I seek to identify in the process of creating and experiencing art.

For purposes of this study, considering Earth-centered philosophies and worldviews adds a depth to our thinking about nature and our language used to describe it. This depth, it could be argued, has been equated with spirituality and religion, although it can also be expressed in more secular terms as well, through reference to human social psychology, evolutionary theory, animal ethology, environmental and animal ethics, economics (e.g. the no-growth or low-growth “green economics” paradigm), and many other disciplines. In fact, there is not one academic discipline
upon which biocentrism could not make an impact, because it represents a comprehensive worldview, one that allows for an interdisciplinary and pluralistic approach. One could also note that the depth of Earth-centered philosophy is the same depth that informs morality, where moral reason is given precedence over instrumental reason. The “depth of reason” is described by theologian Paul Tillich (1958/2001) in The Dynamics of Faith; in his analysis, “moral faith” is part of the process of being “ultimately concerned.” Faith is “ultimate concern.” Tillich’s main point, with regard to reason, is that reason is only one part of a human being and that there are other parts (e.g. emotions, the body), all of which come together in the expression of ultimate concern. One can have ultimate concern for things that do not matter, which Tillich identifies as “idolatry.” His analysis is remarkably consistent with David Loy’s (1997) essay, “The Religion of the Market,” in which Loy argues that consumerism has become like a religion, one that, in the language of Tillich, is idolatrous. Ultimate concern that draws on the depth of reason and unites reason and emotion in service to the highest good is, in Tillich’s view, more authentic. For Loy and also for Berry (1998, 2000) the most authentic sort of faith is one that advances an ecological and social good. Religious traditions that fail to do this are “moribund” in Loy’s view. They have failed. Berry and Orr (2004) both say the same of another major cultural institution: education. Since Tillich’s vision represents a universal theory of human nature, it is applicable not only to religions, but also to secular ways of being in the world: atheist and agnostic non-believers can participate in moral reason as easily as believers of traditional religions. The capacity for moral reason, in this view, exists in us a priori, and is therefore not the sole domain of religious traditions, which exist a posteriori. Biocentric thinking, cosmocentric thinking, deep ecology, and TAK could potentially allow students to think differently about their natural landscapes and reflect on this understanding. Students who engaged in the studies for the research and work related in Natural Curiosity (Chiarotto, 2011) used concepts from TAK and biocentrism to guide their inquiries.

The biocentric perspective regards the environment holistically, not as an ontological category or academic discipline external to the human condition, but as a larger reality of which
humans are a constituent part. The philosophical and cosmoslogical implications of deep ecology are expanded in Berry’s (1988, 2000) cosmoecentric perspective. Berry views humans as deeply connected to the biotic community but also to the universe itself. Our purpose, he maintains, is to be the self-reflective consciousness and conscience of the universe. This involves seeing the awe and wonder of the expanding universe and acknowledging that we have enormous power, either to sustain life or to destroy it. Stephen Scharper (2013) relates that Berry sees that “there is a psychic-spiritual dimension to all reality, and that the emerging, expanding universe holds a place for human consciousness as one locus in which the universe, in a sense, reflects upon itself” (p. 146). This cosmoecentric perspective is a magnificent philosophical concept yet it is grounded in the Earth itself and the whole biotic community. As a part of the universal “communion of subjects” (Berry, 2000) humans can listen and learn from the stories of the Earth, trees, animals, earthworms, and sky.

Presenting an Earth-centered worldview into the curriculum may give each student the opportunity to consider his or her own position as it relates to the universe, the Earth, nonhuman animals, the plight of future generations, and also present generations adversely affected by climate change. This could allow students to think critically about their role in the society, and in the world, in light of the pressing issue of environmental destruction, and how humans, as a species, may act to mitigate it. Ideally, students will begin to shape and adopt an ecological identity, which is reflective and critical, for understanding their place in the natural world. This serves the students’ best interests and the interests of society, as well as the interests of the biotic communities upon which human civilization depends.

II. Ecological Identity, Consciousness, and Development

   i. Childhood

   According to sociologists, the world that we live in is, to large extent, culturally constructed. Education and inherited underlying ideologies and assumptions that inform education,
both for good and ill, are also a product of this construction. Children develop in relation to their surroundings and the dominant ideological foundations of their culture (Hutchinson, 1998). Social constructivism maintains that social identity is shaped by cultural ideologies, institutions and practices. We are all assigned complex and culturally specific roles that continue throughout our lives, often based on gender essentialism, class, race, and other arbitrary criteria, but also simply as a result of familiar relations, careers, and cultural and religious identities. American anthropologist Clifford Geertz (1973) writes in *The Interpretation of Cultures* that humans are “incomplete” and finish themselves “through culture” (p. 49). He argues that our identities, values, practices, and affects are all manufactured cultural products rather than natural assignations. Thus, the terms ‘girl’ ‘boy’ and ‘natural’ are all relative social constructs rather than inherent biological states. Child psychologist Erik Erikson (1963/1993) noted that growing up is an experience of awkwardness and opportunity, a critical period when boys and girls shape their identities, searching for who they will become. This is relevant to this study, insofar as introducing an ecological worldview and bringing nature into the dominant culture of childhood is necessary to challenge the anthropocentric *status quo*, and technocratic tendencies in education.

Educational scholar David Hutchinson (1998) argues that the ideological foundations that underlie the vision for education can be technocratic, progressive, or holistic, and each position views childhood development differently (p. 59). For instance, the “technocratic proponents forward an economic view of the educational process” (Hutchinson, 1998, p. 59), and children are seen as economic resources to be developed. The progressive child challenges this technocratic view, as they “formulate and re-formulate the world around” them (Hutchinson, 1998, p. 60). From birth onwards, children are trying to apprehend and transform their physical and symbolic worlds (Hutchinson, 1998, p. 61). Evelina Orteza y Miranda (1982) defines the progressive child as

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19 Gender essentialism, the practice of naturalizing gender roles, has been rejected by theorists such as Judith Butler, and other feminist thinkers. Moreover, concepts of what is “natural” or “unnatural” are also socially constructed, which becomes evident when one considers that both racist and sexist worldviews were justified through appeal to a hierarchical notion of nature, which placed people of African descent and women on scales of importance lower than that of white men.
an agent who acts and interacts with the environment . . . . He is an intimate participant in the activities of the world . . . . These activities, guided by ideas or previous experiences, bring about relationships or connections between the child and his environment. Such results may be termed outcomes of inquiry or knowledge . . . . [The progressive] child is an active creator of the world which he inhabits. And that which he creates he also subjects to further inquiry, thus promoting more knowledge, connections with the world. (as cited in Hutchinson, 1998, p. 60)

The progressive child uses knowledge and manipulates his or her world to master the physical or symbolic world. The ideology that best supports ecological renewal is the holistic paradigm (Hutchinson, 1998). The holistic child stands in contrast to progressive and technocratic visions in terms of how to engage with the natural world (Hutchinson, 1998, p. 60). French philosopher and historian Jules Michelet (1846/1973) says that the holistic children will “compare and connect very willingly, but they seldom divide or analyze . . . division trouble their minds . . . . They do not like dissecting life, and everything seems to them to have life” (as cited in Hutchinson, 1998, p. 60-61).

The holistic child has an affection and connection for life and sees the unity in all things.

Given these three ideological frameworks (holistic, progressive or technocratic) it is the holistic philosophy that is the most viable for transformative Environmental Education and educating the whole child for re-connecting with nature and the environment. A holistic approach to learning explores significant aspects of childhood development that are absent from traditional theories, such as a relationship with the nonhuman world. The arts are a very accessible way to approach learning about the natural world that is playful and creative, and engaging. Children are never passive subjects and will develop given the cultural construction and classroom ecology that is dominant. Given the opportunity, students will inquire and seek out understanding and relationships of the natural world. There is a natural reciprocal relationship between children and their culture, just as there is a relationship between childhood and the natural world. “Just as the world is a constructor of the child, so too the child is constructor of the world” (Hutchinson, 1998,
Sensory development is an essential part of the young person’s life, but it is also important for learners of all ages: “development means successively asking broader and deeper questions of the relationship between oneself and the world” (Daloz, as cited in Taylor & Elias, 2012, p. 148). The *Natural Curiosity: A Resource for Teachers* reports that direct experiences with nature are integral to learning across “all stages of life” (Chiarotto, 2011, p. 35). This Handbook demonstrates, through examples, that engaging in hands-on learning can have an effect on how we relate to one another and the living world. Students can construct the world that they live in, and “transform the physical and symbolic universe which surrounds her, which is the basis of cultural life” (Hutchinson, 1998, p. 61).

As children develop cognitive abilities to discern their relationship to the natural world, they can also find support in holistic educational paradigms. According to Piaget’s (1973) theory of cognitive development, children make the transition to middle childhood at age six or seven. It is this period of transformation that marks concrete operations in a child’s thinking and offers a ‘brain spurt,’ according to Joseph Chilton Pearce (1992). This period of development is marked by a “differentiation of self from others” (Hutchinson, 1998, p. 82), and at the same time a need to connect with others. Children and youth, from middle childhood and onward, demonstrate an increase in powers of cognition and an “increased capacity for dealing with conceptual representations of objects and events” (Hutchinson, 1998, p. 82). Children in middle childhood are attempting to transform “the wider and symbolic worlds that surround them” (Hutchinson, 1998, pp. 82-83). Between the ages of six and twelve, children begin to “co-construct a functional cosmology of the universe – a ‘working theory’ of the world” (Hutchinson, 1998, p. 83) and their place in it. Younger students feel more closely aligned with nature than older children who have begun to adopt anthropocentric tendencies for seeing the natural world and animals as inferior and expendable. However, engaging in environmental inquiry and arts-integrated learning for place-based learning can have a transformative effect on students of any age. For instance, a few sixth grade students who participated in the arts-integrated biodiversity study, using technologies and
media related, afterwards, that they felt the experience had changed their point of view in one manner or another. One of the students who made a documentary film stated: “I think I can make a difference. I think that I am going to keep making movies, because you know, I liked it and people liked it and I got to learn a lot about the lake” (Personal communication, May 9, 2012).

While the foundations of a “cosmology are initially laid down during early childhood,” it is through “the new capacities of middle childhood that such a cosmology is first articulated in a formative way” (Hutchinson, 1998, p. 83). In other words, children are striving to express themselves and their relationships in their own way. This period is transitional and also deeply foundational. Art, I suggest in this thesis, is a vehicle for such self-expression. Reframing education in the eco-centric context could help students re-connect to nature, providing a foundational basis from which they could affirm or reject Earth-centered worldviews and express their interest in relating to nature. It would also promote an ecological worldview that supports a new vision for “planetary consciousness” (O’Sullivan, 1999). The development of an ecological identity requires paying attention to children’s imagination and creative impulses as they move through middle childhood. As children mature and aim to find meaning in their world, they can also enter into a new relationship with nature and establish a foundation for a new ecological relationship.

ii. Into Adolescence

Adolescence is marked by deep changes, inside and out. Physical development is often marked by emotional tumult and social challenges. It is a time where identity is shaping itself, and some educators argue that nature can play a key role in leading the individual toward a healthy identity development (Thomashow, 2002). Paul Shepard (1996) writes:

Adolescence is a preparation for ambiguity, a realm of penumbral shadows. Its language includes a widening sensitivity to pun and poetry…. The adolescent person is marginal being between stages of life on the shifting sands of an uncertain identity. In this respect his symbols are changeling species: the self-renewing, skin-shedding snake, the
amphibious frog that loses a tail and grows legs, the caterpillar that metamorphoses into a butterfly. (as cited in Thomashow, 2002, p. 262)

As Cynthia Thomashow (2002) notes in her study with adolescents, nature can provide a “solid infrastructure in a world of swirling possibility, a place to return for stability and balance, a place that unguardedly provides the real stuff of life” (p. 265). When we are building identity, it is important to have a sense of grounding and a deep sense of the self. Paul Shepard (1996) explains “habitat and environment” for human beings “are the literal space of the ground of thought” (as cited in Thomashow, 2002, p. 262). It is clearly a time of great change, where the individual is seeking autonomy and connection. Students express a desire to connect with nature, and question the relevance of what they are learning (Bartsch, 2008). It is also the time when the “moral imagination is beginning to really bloom” (Alliance for Childhood, 2004, p. 81).

Extensive research shows that humans of all ages and from all cultures have a strong preference for natural environments (Kaplan, Kaplan & Ryan, 1998). And while children have a natural affinity and sense of wonder when it comes to nature (Carson, 1956/1998), adolescents have a greater interest and appreciation for developed areas, because they suggest social activity (Kaplan & Kaplan, 2002). This does not mean adolescents do not enjoy or appreciate wild places or nature; it only suggests that they are not as interested as younger students in spending time in natural environments. Their interests are almost exclusively social and cultural. Connecting to nature also depends a great deal on the individual. Adolescents from urban and rural areas across the globe often enjoy natural settings that involve activity and socialization. Typically, these activities need to also be self-initiated, and free of rules for the teenagers to fully enjoy and identify with them. Comfort and familiarity are also important factors for adolescents if they are going to embrace being in nature (Kaplan & Kaplan, 2002), which is why connecting to one’s place is a natural means for engaging students.

At the same time, youth need to feel connected and purposeful in their engagement out of doors. In my observation, adolescents are most engaged when they are able to work together
artistically outside the confines of a classroom. Taking photographs to encourage nature writing or creating ice sculptures for art class are opportunities for creative self-reflection and learning. Findings reveal that if students are introduced to nature in the early years, and time in nature becomes a part of their ritual for learning, they will find natural environments to be both familiar and comforting. Julie Bartscht (2008) relates in “Youth as Resources in Revitalizing Communities” that when students’ academic work is “linked to the needs, issues, and community development imperatives of the local community, their level of engagement in both academics and community increases” (p. 69). Furthermore, their ideas and energy can transform those around them.

An extensive review of available research on the topic of learning demonstrates that students “learn best when they are actively involved in understanding and helping solve meaningful problems. This is true across all ability levels and grades” (Bartscht, 2008, p. 74). Students who reconnect to community with their learning are forging an eco-identity.

iii. Shaping an Ecological Identity

In his novel, La Response du Seigneur, Alphonse de Chateau compares the mind to the butterfly that assumes the color of the foliage on which it settles. That is “we become what we contemplate” (as cited in Ferruci, 1998, p. 103). The fundamental principle at work here is that “our thoughts define our universe” (Ferruci, 1998, p. 103) and we can strengthen an idea by thinking about it and, more particularly, by acting on it. This is in keeping with ritual theory (Bell, 1993) and the embodiment of ritualized behaviors: through ritualized performance, social identity is forged at a subjective level. The meanings of performance and ritual are open to different subjective interpretations, the sum of which then constitute a person’s identity in the world. Ritualized behaviors that help us connect with nature, such as gardening, tending to plants, playing with dogs and cats, jogging or taking walks in parks and in urban woods, or just being at rest in one’s own backyard, are all examples of the efforts of urban-dwellers to reconnect with nature on some level. If we bring ourselves into nature, then it will bring itself into our lives. Philosopher,
ethicist, and ecologist Pierre Dansereau (1973) articulates this sentiment with his statement that our “innerscape is a synthesis of our life landscape” (as cited in Sauve, 2009, p. 330).

Encouraging students to spend more time in nature or show respect and care towards nonhuman life, however possible, and facilitating this, should be the role of an educator in the 21st century urban environment, for the physical and psychological health of students. In previous centuries this was less of a concern, because many human beings lived rurally and their lives were not as dominated by technology or as sedentary, and there were often more available greenspaces. But in 21st century urban contexts the divorce from the natural world can be almost complete – due in large part to the ubiquity of electronic media and urban buildings designed without access to greenspaces – unless parents and educators make an effort to reconnect children to their natural environment. New research demonstrates ritualized behavior can affect us physically as well; repetition of technologies are causing traceable changes in children’s brain pattern and thinking (Dakin, 2014), which causes many people concern, and a hope for more time in nature to counteract this trend.

Ecological identity refers to the ways in which “people construe themselves in relationships to the Earth as manifested in personality, values, actions, and sense of self. Nature becomes an object of identification” (Thomashow, 1995, p. 3). Ecological identity is also a stepping-stone for adopting ecologically responsible citizenship. As individuals shape and re-shape their sense of self in relation to their environments throughout their lives, ecological identity is an ongoing concept for “exploring the patterns of personal and professional growth, as linked to . . . everyday life” (Thomashow, 1995, p.18). Human beings are already predisposed to ecological identity, as a result of a long evolutionary history (of over a million years) in the pre-technological and entirely natural world, as explored in the field known as evolutionary psychology.

The technological, industrial world is a very recent development in our history, and we are not socially or psychologically well adapted to it. According to Jaques Ellul (1964) the artificially built forms of modern cities and technologies run counter to the human scale. Ellul gives the
example of noise: it is so excessive in modern technologically dominated environments that it is harmful to us. Think of traffic where sirens are meant to penetrate the glass of cars, but also end up causing pain to pedestrians, or the noise pollution endured by those who live near airports. The basic human need for periods of silence is ignored by engineers who have designed engines which make loud sounds. Or think of the sedentary behavior linked to the widespread use of computer screens in daily life. Long periods of sitting still are unhealthy because human beings evolved to be physically active. Computer design goes against the human design. Ubiquitous computing (where there is a mandatory use of computer screens in every building) may become a reality in the near future, divorcing humans even more from embodied experiences of nature. Another key example is the car and ‘car culture,’ which is antithetical to the experience of nature on nearly every level: the creation of roads and suburban sprawl destroys nature and dominates landscapes to such an extent that cities are now designed around the needs of cars (more than the needs of humans). Cars themselves cause global warming, driving replaces walking in and identifying with local environments, and drivers have a feeling of separateness from the outside world. In fact, the documentary film The Human Scale, directed by Andreas M. Dalsgaard (2013), demonstrates how the design of the modern city (created for the movement of cars, and not pedestrians) has isolated us from nature and one another. Many other examples could be given. The result is that the technological world has been internalized by most of our species as the ontological norm, resulting in a condition that Berry (1988) compares to autism.

An ontology defined by technology is necessarily limited to the parameters of its human design and engineering and programming; an ontology defined by nature is, by comparison, unlimited, because nature is limitless in its manifestations. Sociologist Peter Berger (1967), in The Sacred Canopy, notes that human beings have a cyclic pattern of internalizing, objectifying, and externalizing ontological norms, as well as values. The sum of such norms and values and practices he calls the nomos. If the nomos is defined by a technocratic, anthropocentric reality and reified by us through cultural norms and institutions, the result is identification with those norms and
institutions, as though they constituted the whole of reality. In like fashion, we can begin to
distance ourselves from this identity, and learn a new identity – one that is closer to what humanity
experienced for most of its history as pre-technological animals in the wilderness. This is healthier
for us psychologically and, ultimately, healthier for other living beings, especially if it results in the
mitigation of environmental destruction caused by our allegiance to the technocratic industrial
norms and values.

Identity can be defined as “sameness,” but it is also a term to define a complex and
dynamic process: a person’s concept and expression of the self, values, and relationships. Ecology,
(which comes from the Greek oikos meaning of “study of house”) is the scientific study of the
relationships between living organisms and their environments (Thomashow, 1995). It is also used
metaphorically to describe how humans relate to nature. Rebuilding a relationship with the natural
world may be viewed as a process of identity construction, referring to the process of personal
introspection. Ecological identity describes a shaping of self in relation to nature and implies an
awareness of relationships and a deepened ecological consciousness. It is rooted in asking
questions about place, connectedness to the Earth and community, and questioning where and how
things come to us (rather than taking them for granted). For instance, it would compel us to
question where our food comes from, or what goes into making a consumer item of any kind. It can
challenge the notions of consumerism (which is generally unquestioned in our culture) and brings
greater awareness of the world beyond the technologically dominated human engineered
environment that has come to define quotidian reality for the majority of humans. As Stuart
Westerlund (1982) articulates in “What we Believe Does Make a Difference:”

In the hustle and bustle of going about our daily affairs most of us do not take the time –
or effort – to determine (or reflect on) our own fundamental beliefs. Most of us can glibly
‘talk a little’ (in general terms) about what we believe to be real, true and of value. But
when push comes to shove, we are hard pressed to explicate our specific beliefs. Why we
do what we do when, where and how we do it? . . . Some of our decisions are wildly consequential. (p. 87)

Students may inquire about where they live, and what their place or role is in the nature of things (Thomashow, 1995). Such questions come from an inquiring ecological mind. Using ecological inquiry and the direct experiences of nature can allow for a sense of how we are connected to the world. It is one step in constructing an ecological identity. This critical introspection into everyday activities, such as rituals, and the culture at large, requires an ability to overcome both internal and external distractions and represents a way of approaching life experiences in a direct manner. This kind of reflective introspection is particularly important in our present historical period when media enchantment and virtual worlds are prevalent in students’ lives. While this study contemplates using that media and technologies for environmental learning, such technologies should not be considered a replacement for direct experiences in nature and the out of doors. Currently, technologies and media can be used as tools for creative exploration of local environment, shifting student perspectives and their role of consumers of media to producers of place.

Two sixth grade students in the classroom I visited took their biodiversity questions down to Lake Ontario, on their own time, in order to film and record the life of a beaver. Their short film, which they shared with the class, attempts to put themselves in the beaver’s point of view, is shot almost entirely from a low to ground perspective. Although the students found a tree that the beaver’s had recently visited, they did not see the beaver itself, and therefore incorporated and spliced footage and pictures of beaver and their dams from other films, making use of mass media. This research during the film production led the students to find out that humans catch and kill beavers for their anal glands, which produce a gelatin, which is then used, among other things, in making ice cream. Making a statement about that in their video, and their objection to the instrumental use of beavers for this reason, the students used technology and media to bring greater awareness of the beaver’s plight in our world, and shift their role as consumers to producers of
their own environment. Their film is a clear attempt to relate to and understand the animal, but also to create a change in behavior in the human world.

Environmentalism often comes from a reflective and active ecological worldview, as part of an emerging ecological identity, shaping itself in response to a deep-seated need earlier identified as ‘biophilia.’ However, as Orr (2004) puts it, “we learn to love what has become familiar” (p. 137) and bond with what we know. This is why humans become attached to artificial environments that are not necessarily good for them. We all form identities that are tied to place and environment, because it is a natural predisposition to do so. If the place and environment are alienating, limiting, and not life affirming, we are adversely affected. Bonding with our environments is something constructed through experience and circumstance, and is defined by author/geographer Yi-Fu Tuan (1974) as ‘topophilia.’ Biophilia as innate, arising from millennia of adaptation to natural environments; topophilia, in contrast, can be socially constructed, though it emanates from the same predisposition: to bond to place and environment.

E. O. Wilson (1984) maintains we are a “biological species,” above all, and “will find little ultimate meaning apart from the remainder of life” (p. 112). The attraction to virtual worlds, which taps into our predisposition to identify with place, is having devastating consequences on the psyches and bodies and health of young people because it is not real, and yet it is addictive. Orr (2004) calls an aversion to the natural world “biophobia” (p. 136). It is ironic that the predisposition that evolved in us in order to adapt to natural environments (biophilia) might be warped by an addiction to virtual realities into de facto biophobia as young people begin to prefer the fantasy worlds to the naturally occurring worlds (York, 2013). Affinities for or aversions to nature can originate naturally, or through circumstance, but they are maintained through the rituals in our everyday lives (Bell, 1993), which can be supported or rejected by curriculum, teaching and learning. Education thus has an important role to play in affirming biophilia and steering students away from attachment to alienating environments.
Art can support an affinity for nature when it honours the places we know and care about. One educator, who shared her class story for the *Natural Curiosity* handbook, integrated visual arts, writing, drama, and research to create three-dimensional trees for a theatrical set design (Chiarotto, 2011, p. 77). She related how the students were curious and engaged from the outset when they went outside to sketch trees that they later incorporated into their vision for the play. This integration of subjects can help students see how all things are related and relevant in their learning. The experience of sketching outside, writing about the process, and creating a work of art while reflecting is similar to the nature writing process that I describe in *Chapter VII*. Any work of art (for set design, nature writing, creating a video or a poem about an animal) can honour the places students know and care about when they have the opportunity to step outside and experience that space and place. Adolescents who demonstrate a love and stewardship for the Earth are often first taught to do so as children (Katcher, 2002).

A second grade student (from the class I visited) created a descriptive poem after watching birds:

![Figure 11: Seagulls, (TDSB student, 2\textsuperscript{nd} Grade)](image)

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*Figure 11: Seagulls, (TDSB student, 2\textsuperscript{nd} Grade)*
The second to last line of the illustrated poem reads: “aren’t you lucky to be what you are” showing the writer’s great depth of compassion and care for the natural world. The beauty of the poem also lies in the student’s ability to fly with the seagull, to envision herself as the bird itself, with friends, with a home, inviting the reader to imagine with her.

Children are growing up in a technological world that is increasingly distanced from the natural world. The natural world can stimulate children, and it is rich with opportunity for critical thinking, creative inquiry, and emotional and cognitive development (Kellert, 2002; Sobel, 2005; Kahn, 1999, 1997; Kaplan & Kaplan, 2002). In fact, Edward O. Wilson (1993) suggests that the natural world is the most information-rich environment one can encounter to facilitate cognitive and emotional development. There is a growing body of empirical evidence to support the idea that an emotional response to nature (e.g. fear, love, wonder, curiosity, joy, compassion) that precedes an intellectual response provides the foundation for an emotional or “affective” connection to nature and is the “key point to learning and teaching” (Krathwohl et al., 1989, as cited in Kellert, 2002, p. 5).

Rudolf Otto (1958), in The Idea of the Holy, identifies an emotional response to the ‘Wholly Other’ as “numinous,” and suggests that it is intrinsic to human nature. One can experience numinous feelings in response to imaginary and socially fabricated constructs, but the original experience of the numinous is in response to the overwhelming power and beauty of the natural world, central to our evolutionary journey. The numinous feeling can include fear and awe as well. Having lost the fear of nature, due to the influence of the illusion of technological mastery over it, we as a species have lost an important part of our humanity. The era of climate change and the death of the oceans should re-awaken in us that primal fear of nature – not in order to find new ways of mastering it, but in order to learn the humility necessary to stop destroying the conditions that make life possible on this planet. The numinous feeling that one can experience, in response to nature, can tap into fear, awe, fascination, a sense of beauty, wonder, and joy. It can run the gamut of emotions and transform lives. Art is a natural way to approach such emotions and provides
students with opportunities to realize and express their numinous experiences. Educators may even find that students thirst for such experiences and are grateful for the opportunity to express them within a structured setting, especially if they understand that such experiences are necessary for ecological awareness and re-envisioning our species’ place in the universe.

The environmental scientist and writer Rachel Carson (1956/1998) grew up reading nature poetry and observing the wonders of the natural world. She observed that a child’s joy and sense of wonder is born from immersion and creative interaction with the diversity and mysteries of the world: “it is not half so important to know as to feel” (p. 56). As Emily Dickinson (1957) relates in her poem:

The World is not a Conclusion.
A Species stands beyond--
Invisible, as Music--
But positive as Sound--
It beckons, and it baffles--
Philosophy---don’t know--
And through a Riddle, at the last--
Sagacity, must go-- (p. 33).

Students need opportunities to feel and imagine, as well as think and reflect on their identity in relation to nature. For this very reason it is important to introduce students and educators to an awareness of how they relate to nature and encourage them to reflect upon that connection.

Outdoor and nature photography, in my own experience as both a parent and educator, provides opportunity to do so. Figure 12 is an illustrative example of taking time outside, with my own children, to play, make art, record, and reflect on place, space and the sense of connection that comes from time in nature:
Not only did we enjoy the beauty of the beach, but the moment shared together, and the memory and reflections we drew together from that experience. Media and technologies play a big role in helping shape and create, but also re-iterate what was experienced, and consider how we could act on those feelings and perceptions later on. My daughters continue to take photographs of plants, leaves, flowers, rocks, and any other number of things in nature that they find aesthetically pleasing, building on their own ecological literacy and consciousness.

Environmental psychologist Herbert L. Leff (1978) explores the idea of an ecological consciousness in his work *Experience, Environment, and Human Potentials*. Exploring the conditions and ideas that can enhance creativity, personal change, self-awareness and values in and for the environment, Leff proposes that ‘ecological consciousness’ comes from enjoying and appreciating things in and for themselves, adopting an eco-centric value system, and seeing oneself as a part of the whole. He adds that seeing oneself as an integral part of the Earth can be difficult to internalize (especially if one is removed from it, as we increasingly are within a technological society), but this alternative identity “seems to offer the key to an active awareness and appreciation of our essential unity with each other and the rest of nature” (p. 284). It is not
uncommon for urban children to locate an ecological identity in their indirect and vicarious experiences with nature, such as witnessing pollution or images of polar bears or other iconic animals.

Almost every student in the second grade classroom I visited, when given the opportunity to do an animal project, chose non-native animals, and ‘charismatic mega fauna’ such as elephants, polar bears, whales, or exotic mammals. Only one child chose to study, write a poem, and create an artistic rendering of a native common animal, the squirrel. The student’s project was rich with detail, and demonstrated her acceptance of animals as individual subjects worthy of her admiration and attention: “I have squirrels in my yard and I watched them before I did my project. It helped me think about their habitat and what they are really like. They are fast. They are my friends. I have names for most of them.” This student’s learning experience extended into her life outside the classroom. Her art project helped her reflect: “I look for squirrels now and wonder what they are up to” (Personal communication, March 7, 2012). Her project, though not using an iconic animal, was based on the personal and direct experiences that helped her identify with a local place (her yard).

What, where, and how we experience the environment affects us as children and extends itself into our adult lives. Broadly speaking, childhood experiences in nature or of natural imagery affect how identity is shaped. Education can promote a connection to nature and highlight feelings of topophilia and biophilia. Ideally, our socially constructed topophilia will be fed with greenspaces and connections to other animals, and thus tap into biophilia, creating ecological identity in the process. Clifford Geertz’s (1973) theory of human identity construction would seem to support the idea that ‘ecological identity’ is another type of cultural construct but, as noted earlier, one that ties into deeply embedded psychological predispositions that evolved in response to natural environments over millennia. Similarly, Gramsci (1971) describes the hegemonic process as one in which dominant ideologies become invisible as they become rooted in cultural ways of understanding, and accepted as commonplace. Our predisposition for identifying with place and constructing cosmologies that ‘normalize’ and ‘naturalize’ our immediate environments treats
urban environments as though they were natural. In this way, social control is maintained, but at the expense of the human psyche and, in the era of climate change, also at the expense of the biosphere and the future of humanity.

Anthropocentric industrial practices and norms have now been globalized. The development of new ecological identities has become a vital work in progress for many humans around the globe. Ecological activists and authors, such as scientist David Suzuki (1997) and geologist Thomas Berry (1988), propose that our natural state of being and identity on this planet is one that is closely aligned with the rhythms of the natural world. Although there is some movement in our culture to ‘go green’ in some nominal way -- in other words, to adopt sustainable thinking and actions -- most of the time individuals do not consider their ecological identity. Living in urban centers alienates us from wild places and challenges our sense of connection to life on Earth, even though we are part of it. One second grade student in the classroom I visited told me in conversation: “Nature is everywhere if you look.” For the most part our societies choose not to look at what Al Gore called an “inconvenient truth,” one that requires us to fundamentally re-think the way we live. The process of dispensing with ‘convenient lies’ and facing the inconvenient truths, and adopting new ways of living, can and should start with the educational system.

Identity shaping is affected by where we live, what we do, how we learn, and mediated by the social, cultural, religious (and/or spiritual), and socio-economic experiences we have in our lives. From this perspective, and as a framework for this study, I draw on some of the insights from ritual theory (Bell, 1993), which focuses on embodiment of ritualized behaviors in everyday life and the open-endedness of interpretative approaches to which rituals lend themselves, including the Environmental Education paradigm. This focus provides insight into the way that our relationships to media and technology, animals and consumerism, nature and self are socially and politically constructed. It also highlights a means for creating the conditions in education to construct an ecological identity. The focus on ritual behavior and "social imaginaries" (Taylor, 2004) opens the conceptual space for an exploration of multiple paradigms, including place-based learning,
environmental inquiry and holistic education (Sobel, 1995; Louv, 2008; Miller, 2008). These particular paradigms demonstrate that our collective health and wellness rests on our ability to use our imaginations and to have a close relationship with the natural world.

Real paradigmatic changes can occur when we can accept multiple ways of knowing and being in the world. In *Art and Sustainability: Connecting Patterns for a Culture of Complexity*, Sasha Kagan (2011) maintains that culture and nature are complex and, in order to transcend dominant worldviews, calls for the practice of “transdisciplinarity” which goes beyond multi- and interdisciplinary thinking. It resides in a third way, beyond the knowledge of academic disciplines, in a kind of subtext that is sensitive to complexity. The complexity of knowing and seeing conventions of culture, without reducing them to fixed categories, points the way towards real relationships for sustainability, which are not neatly organized or static. This sensitivity is called forth with art. Kagan (2011) also suggests that art can help us to ‘know’ or ‘feel’ the complexities of nature because it follows a similar organic process, characterized by “systems thinking.”

According to Fritjof Capra (2005), the founding director of the Centre for Eco-literacy and also a liberation theologian of some note, the most useful framework for “understanding ecology today is the theory of living systems,” based on networks which are non-linear (pp. 19-20). Living systems are rooted in relationships and recognize the parts to the whole, from objects to relationships, from quantity to quality, and content to pattern. These perceptual shifts can occur when one creates art, either from individual items and discarded objects, resulting in whole forms that are symbolic and represent relationships, connectedness, and contextual thinking, or when one writes a poem or a story based on an interaction, real or imagined, with the world. An ecological identity can emerge from any arts-based practice because it highlights presence, living systems, and complexity.

Education needs to stand out from the “din of environmental warnings, policies, and campaigns” (Weintraub, 2012, p. xiii), and engender an ecological identity. Eco-art is an example of how artists are challenging rigid thinking about waste as disposable and the constructs of our
cultural identities when they conceive of art for environmental awareness. Art does not have to have a function, such as creating solutions for sustainability; it can be transformative because it calls on our aesthetic abilities for understanding.

In 1990, the municipality of San Francisco began an Artist in Residence Program called “Recology AIR.” Its purpose was to create awareness and reduce waste through the creation of socially responsible art. San Francisco now provides Bay Area artists with waste materials, and has transformed a transfer station into a studio space designed to create art and educate the public. Already, ninety-five artists and student artists have been engaged in this unique program. The artists scavenge waste receptacles from a garbage transfer station, transform them into art, and then put on art shows (Recology Waste Zero, 2013, para. 1). They also educate students and communities as to how to work with recycled materials. The whole project, which promotes recycling and reusing objects, demonstrates the power of creative thinking and how we can transform our communities by confronting our problems with practical arts-based solutions. This project has become a very popular residency program for American artists and has diverted waste from the landfills while promoting ecological awareness. San Francisco leads all cities in North America, diverting eighty per cent of waste stream from landfills (Recology Waste Zero, 2013). “Sustainability always involves a whole community” (Capra, 2005, p. 24), and art programs, such as this one, recognize that everything is related and cyclical.

The phrase “waste equals food” means that “if an industrial system is to be sustainable – all manufactured products and materials, as well as the wastes generated in the manufacturing processes, must eventually provide nourishment for something new. In such a sustainable industrial system, the total outflow of each organization – its products and wastes – would be perceived and treated as resources cycling through the system” (Capra, 2005, p. 26). As we co-evolve with our environment, recycling waste into art could have a profound effect on our systems thinking and our identities. Art plays a role in helping learners make connections for sustainability and for community. Although the role of art in community is an important and interesting one, it is too
broad for the subject of this thesis. Suffice to say, art can play an instrumental role in helping communities and individuals relate to place, the natural world and one another.

Environmental learning can help learners develop an ecological identity and an awareness of the natural world and critically assess their own behavior in a larger cultural context. Mitchell Thomashow (1995) states that ecological identity refers to "how people perceive themselves in reference to nature, as living, breathing beings connected to the rhythms of the Earth" (p. xiii). Nature, according to Louv (2008/2012), is part of day-to-day life, even in urban centers. The arts can provide opportunities to explore how our identity is shaped and defined by nature and place, as well redefine and shape environmental learning for the 21st century. There are no ideologies or processes that will, in isolation, provide a means for transforming identities. There are many curriculum designs, and methods for integrating learning in and out of the classroom and community. Environmental Education can adopt "transdisciplinary" (Kagan, 2011) approaches to learning. This transcending of disciplines can be viewed as teaching the whole person. This means interweaving the arts and sciences, the body and the mind, into unique learning opportunities, and adopting a broad-based, pluralistic approach.

III. Summary

This chapter addresses existing worldviews and challenges the binary logic that supports the anthropocentric tendencies and fragmented learning, which occurs throughout traditional educational paradigms. As such, it challenges the dominant unsustainable cultural norms that cause us to experience feelings of fragmentation. An Earth-centered worldview (or worldviews) and a reconnection to the biotic community are shown to mirror the complexities of nature. The arts are examined as a means for reconnecting us to our own senses, developing an ecological identity, and experiencing the complexities of our relationships within the biotic community – including relationships with and respect for all species. The following chapter looks to why and how the arts are important for environmental learning.
CHAPTER IV: THE ARTS AND ENVIRONMENTAL EDUCATION

_The most powerful weapon on Earth is the human soul on fire._ (Ferdinand Foch, 1851-1929)

I. Introduction

People of all ages find the arts an invaluable source of inspiration and an avenue for meaningful communication. The arts, like religion, politics, myths, and legends, or other universal manifestations of culture, are almost as old as the species itself. From the earliest cave drawings to children’s songs, humans have looked to the artistic expression and performance and narratives to find meaning in their lives, and to articulate their experiences. Art can educate the imagination and help develop originality. It is a vehicle through which the human imagination can take form, providing the means for communication through shared representations of meaningful experiences. It can tie a community together by means of shared representations, binding people through symbols and themes deemed to be important. A good example is prehistoric cave art that shows the importance of large animals in the life of early man. Another good example is music that is able to bring people together in a direct and immediate manner. Shared stories, from the earliest times, have united human beings into communities. Art making can be effective in “harvesting and revealing new truths about human experiences” (Burns and Frost, 2010, p. 11).

Educators find the value of the arts in their usefulness for releasing creativity and imagination (Warner & Myers, 2009; Slavin, 2006; Miller, 2008), providing an aesthetic door to everyday lived experiences (Dewey, 1900/1963; Eisner, 2002; Graham, 2008; Evans, 2009) and a means for emotional catharsis (Evans, 2009; Davis, 2007; Csikszentmihalyi, 1990). The arts can generate wonder and awe in our urban world where everything seems controlled and machine-like. They are portals to the numinous dimension of human experience, a dimension that is all too frequently suppressed in an industrial, technocratic society dedicated to endless economic growth, where the value of the arts is often reduced to their ability to generate money as reflected in ticket
or record sales, and the self-esteem of otherwise good artists who plummet commercially. The arts are much more than a way of making money. They are one of the fundamental repositories of human wisdom and present important opportunities for students to discern, communicate, and understand the world (Catterall, 2009; Dewey, 1934/2005; Burns & Frost, 2010). Significant new research in brain development shows that the arts promote growth in the prefrontal cortex, the part of the brain that develops slowly and provides the ability to reason (Catterall, 2009). These outlooks all suggest that the arts can aid learners of all ages make progress in their knowing and learning (Eisner, 2002).

Children and adults alike rely on the communicative arts to express feelings and thoughts. Their art is often based upon their experiences and is representative of a balance of their immediate worlds and imaginations (Gaudelius & Speirs, 2002). An essential part of learning to be in the world involves making and viewing art that reflects our emotional and imaginative abilities and visions. The arts can also teach us to reflect and forge relationships with the natural world. From a biocentric perspective, learning in and through the arts is valuable for developing and maintaining a deepened relationship to the Earth community. As art theorist Elliot Eisner (2002) relates in his work, The Arts and the Creation of Mind, the arts can develop the mind and enlarge our appreciation of the world; arts programs can help us pay attention to the imagination and “cultivate forms of perception that enable students to read the qualities of the visual world, but also promote students’ abilities to describe those qualities intelligently” (p.124). Artists are in many ways like scientists. They confront “our customary modes of seeing and challenge us to think afresh about how aspects of the world might be experienced” (Eisner, 2002, p. 124-125).

Re-imagining is especially important for how students come to know and reflect upon nature and their role in the natural world. Berry, in The Dream of the Earth (1988), lists four major cultural institutions through which the transition to the Ecozoic Era could be facilitated: education, government, corporations, and religion. He could have added the arts to the list, because it is through arts (of various kinds) that culture norms and values and symbols have been transmitted
from earliest times. In fact, culture, art, science, magic, philosophy, and religion could not properly be thought of as separate categories for most of human history. Culture was an interconnected amalgam of these elements. The European Enlightenment attempted to separate religion from science and, at the same time, relegated the arts to a separate category, to be thought of as mere entertainment rather than as an important means of sharing cultural norms and expressing ultimate meaning. This division and diminishment of the arts has had a negative effect on human culture and a cultural understanding of the natural world.

II. What the Arts Teach

i. Opening up the Power of Imagination

Imagination is one of the most important parts of learning. As Einstein once remarked “Imagination is more important than knowledge. For knowledge is limited to all we now know and understand, while imagination embraces the entire world, and all there ever will be to know and understand” (as cited in Harris, 1995, para 1). It opens up the possibilities for listening to the natural world, the inner voice, and understanding of our place in the world. In fact, all conscious experience has to some degree an element of imagination (Dewey, 1934/2005, p. 283), and art is one a way of enlarging and evoking this experience, and giving it a voice. It is means through which subjective experiences, which are otherwise incommunicable, may be shared between persons separated by time, space, class, or other barriers. As such, art has an important social and political function, like religion, which also utilizes shared representations of subjective experiences to convey ultimate meanings. It should not be surprising then, that art and religion have a shared history in most cultures, where the arts have been used to convey myths and religious narratives. Art gives us permission to explore the imagination as a source of meaning, but it is flexible, fluid, dynamic, and tied to our emotional selves. Our imaginations are important for re-creating narratives for how we are to live now and in a sustainable future. Our places of education can provide opportunities for students to experience their own imaginative process and respond in ways that honor the Earth community. Moreover, our places of education “must create spaces where we
go to hear the voices of imagination calling us to justice, compassion, and ecological sustainability. If we are to survive – as educational leaders and as a human community – we must begin to hear and respond” (Spehler & Slattery, 1999, p. 10).

Eisner (2002) relates that the arts are different than the sciences in that they do not hold one accountable for ‘telling it like it is” (p. 82), but allow us to explore things imaginatively. By making things larger than life, and representing life in symbolic ways, we can acquire a “new schemata” that can help us wonder and approach life with the attitude of “why not?” (Eisner, 2002, p. 83). I find this particularly important in educational settings when students are not engaging and not imagining changes and approaches that are freeing. Instead of always having to be ‘right,’ (e.g., having one’s ego validated), students can explore and create art that honors presence and the ‘right now.’ Maxine Greene (1995) elucidates on the power of imagination in our lives:

It may be the recovery of imagination that lessens the social paralysis we see around us and restores the sense that something can be done in the name of what is decent and humane. I am reaching toward an idea of imagination that brings an ethical concern to the fore, a concern that . . . has something to do with the community that ought to be in the making and the values that give it color and significance. My attention turns back to the importance of wide awakeness, or awareness of what is to be in the world. I am moved to recall the existential experience shared by so many and the associated longing to overcome somnolence and apathy in order to choose, to reach beyond. (p. 35)

This kind of awareness that Greene describes can evoke a sense of care for the world. Art can bring forth feelings of care and concern for others. It can remind us we are a part of a biotic community. For instance, one secondary school student in the twelfth grade class that I visited created a digital story with the computer program called iMovie. He stated: “I learned to care about this place in the city I never cared about before. Animals are there, but they hide, so I made a story from a small animal’s perspective.” Filming from the perspective of the non-human animal in order to incorporate their unique perspective occurred with the sixth grade student video project as well,
demonstrating that students are interested in telling the stories through the ‘other’ marginalized voices of animals.

Digital storytelling is a 21st century creative writing exercise, but art as self-expression can be manifested in a multitude of ways, such as sketching out of doors, writing a poem, using a cell-phone camera, or recording a dance or song. In this thesis I use art broadly to embrace all the areas of cultural activity that influence the ways we see and interact with the world in a symbolic communication. Art entails the representation of a creative idea given material form, and allows that representation to be shared between persons; but it also highlights different processes, products and practices. In this way, we can learn from the art of others, but we can also learn from our own making, viewing, and understanding art through diverse mediums, technologies and materials. I pay special attention to language arts and the practice of nature writing in Chapter VII. I also investigate the marriage of art and technologies for purposes of environmental learning and why this is an important consideration.

Students may create art in order to communicate and represent their experiences, but it is also significant that they experience and share art with one another. Shared experiences are important for identity development and for promoting an ecological sensitivity. As noted earlier, experiences can be shared through communal representations, by means of creative expressions. For example, young people often watch YouTube videos and respond to those videos with their own, thereby creating an online dialogue and creative landscape for communication. The movement of young people from consumers to producers of their own media experiences is becoming more and more the norm as students engage in a multitude of new technologies and new media to communicate their emotions and thoughts. This emerging movement (young people producing their own electronic media) is marked by creativity, artistic expression and new

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20 For instance, two sixth grade students watched footage of the beaver while making their own video about beavers. Their own artistic exploration was influenced by the art of others. The experiences of watching the same footage and looking at the same visual art piece, created a common framework to discuss the animal related video.
possibilities for Environmental Education. Vicarious experiences with nature, such as watching or creating an animal related video or a video on climate change, can open up the imagination and provide a myriad of avenues of thought and relating to the world.

Art can help refine the sensibilities and give imagination the “license to fly” (Eisner, 2002, p. 198). From poets to essayists and philosophers, people have long associated this freeing of the imagination with loss of self, and the fusing of the self with the object of knowledge (Eisner, 2002). Dewey (1934/2005) comments on how an intellectual activity needs to be recognized as an experience of quality, because “without it thinking is inconclusive” (p.199). In this regard, Dewey is arguing that aesthetic needs to be present for an intellectual idea to be complete. In other words, art makes such ideas accessible. An example is the psychological ideas presented in the film Citizen Kane. Orson Wells was able to convey some powerful and (at the time) emerging ideas, initially articulated by Freud, through an artistic medium (film) in a way that made those ideas accessible to millions of people who might not otherwise bother to understand the ideas.

Art provides that opportunity by couching raw ideas in narrative structures or images, and in the case of music, publicly conveying emotions that might otherwise remain private. Art, in the same way, can create the space for experiencing nature symbolically and meaningfully, by expressing biophilia and the desire and appreciation for preservation of the natural world and its varied inhabitants, and at the same time challenging the cosmology that is destroying that world. Ansel Adams’ photography is a good example of the former. A good example of the latter is the film by Werner Herzog (1984) Where Green Ants Dream, which, through a fictional narrative, expresses a deep dissatisfaction with the effect of open-pit mining on Australian Aboriginal culture and the natural world that is integral to the aboriginals’ worldview, culture, and religion.

ii. Finding the Aesthetic to Everyday Lived Experiences

Aesthetics, a branch of Western philosophy, can be viewed as a complex and critical reflection on art, culture and nature, and often refers to an appreciation of beauty, and a way of seeing and being in the world. It is can be defined as the study of sensory perceptions or *sensori-
emotional values, sometimes called judgments of taste” (Aesthetic, para. 1). The reference to ‘judgment’ to describe aesthetics originated with Immanuel Kant’s (2000) *Critique of the Power of Judgment*, in which he describes beauty in teleological terms, demonstrating how the capacity to appreciate beauty may be thought of as having a practical (which is to say, ethical) value for the individual and for society, if it is thought of “regulatively” (which means deontologically, or with regard to an ethical rule that reason gives itself, which Kant says allows us to conceive of something like a good society towards which to aspire). While vastly oversimplifying Kant’s philosophy, I want to underscore his point that art can have this practical/ethical value for society. In his view, the rational being has the ability to experience beauty in nature (which can create in us a feeling of the “sublime”) for this very reason; in other words, this capacity has a practical function that is best fulfilled when society is the beneficiary of its fruition. While Kant wrote in the 18th century, well before the environmental crisis, and was a decidedly anthropocentric thinker and could hardly be called environmentally or animal conscious (although his ethics have been used to advance these issues (York, 2013)), his philosophy of beauty is important for this thesis. If our capacity to appreciate the beauty of nature and to experience “the sublime” in nature has a practical/ethical purpose for the good of society, the need for the realization of this purpose is nowhere more evident than in the climate crisis, where all cultural resources must be drawn on, from every sector of human endeavour, to help effect the transition to Berry’s Ecozoic Era. Kant would dismiss the idea “art of art’s sake.” If art (or any cultural expression for that matter) does not have a practical value, it has, in his view, no real value.

In this thesis, I argue that art has the potential to help connect us to nature and engender a transition toward a more environmentally sensitive worldview, but I also maintain that art is valid as an aesthetic experience. An aesthetic experience for students can be any encounter with the world: the way the sunset looks over the lake, colourful leaves on the sidewalk, the wind moving the trees. The term *anesthetic*, referring to the suppression of feeling, is the opposite of *aesthetic*, which denotes a heightened feeling (Esiner, 2002). Students can be moved to tears by a piece of
music, or a film that touches them in ways they cannot always articulate, but in ways that are still very meaningful and evocative to them. As Eisner (2002) writes: “one very important aim of arts education is to help students . . . acquire an ability to frame virtually any aspect of the world aesthetically” (p. 232).

Bateson’s (1972) idea of the ‘patterns that connect,’ referred to earlier in this study, is useful in understanding how art and nature can easily align. Kagan (2011) notes how the “aesthetics of sustainability” comes from this ‘de-centering’ of the self and repositioning ourselves within a larger framework of nature. This aesthetic creates a space for imagining how humans are connected to all living systems and are a part of a system, a generative whole, within the Earth context. Creating art helps communicate and share this aesthetic and binds us to the whole. When we read a story or a poem that draws out our emotions, we are connecting responsively with one another and all living systems.

The arts can allow us to absorb the aesthetic values of our culture (Gardner, 1990). Orr (1994) believes that one of the obstacles to transformative learning occurs when we stop caring about the aesthetic value of place, and allow ourselves to be desensitized. Recent studies of art and ecology of place demonstrate that the arts help students in communicating their concerns about place and their natural environments, which are often changing (Gradle, 2007b). Communicating concerns and hopes for an aesthetic that is reflective of the beauty that is found in nature is one of the aims of the arts as well as of Environmental Education (Inwood, 2008; Gablik, 1991). Research shows people who care about their environment will go to great lengths to keep it naturally beautiful and to preserve wild places, old growth forests, and even single trees in the city.  

Students who participated in the Royal Conservatory education project, Scared Spaces, used video to film and narrate their personal stories of place and care for a sacred space in the city. Using concepts of indigenous learning, active ecology and media literacy exploration, students

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21 A recent landmark ruling in Canada makes it a criminal offense for owners of shared trees to arbitrarily cut them down.
were encouraged to find a small piece of nature in their own neighbourhoods that was meaningful to them and their community and gave them a feeling of peace and connection to the natural world. Learning through the arts helped students to make a connection with the space. Students photographed and filmed their sacred space, expressing in dialogue and narrative why that spot was important to them, and then made a commitment to care for its wellbeing. Some students came back to their ‘Ash tree’ and picked up litter, making sure there were enough leaves as compost around its roots. The Sacred Space Project is an example of students finding nature in the large urban center and making meaningful connections through art and media. The program leader and director, John Scully, stated that many students found their sacred spaces were places that animals, such as squirrels, birds, and ants made their home (Personal Communication, May 12, 2012). Making connections with nature and animals is an important part of Environmental Education, but also an important part of being human.

Scientist and author David Suzuki (1997) reminds us that humans are genetically programmed to commune with other species, and Wilson’s (1984) term biophilia denotes a need and love of nature. This need does not have to be thwarted by the growth of cities and the powerful presence of media and technologies in our lives and the lives of our children. As the project Sacred Spaces makes clear, media and technologies can enhance and bring attention to these relationships in a symbolic and direct way. Our habitual use of technologies and media can be altered and used critically in order to advance Environmental Education in urban areas where there may be minimal contact with nature. In fact, as one secondary school teacher in Toronto remarked in conversation, “When we began using media outside to do nature writing, the students were all over it, but eventually they put their cameras down and starting just enjoying being outside, sketching, observing really, and then writing” (Personal communication, June 12, 2013). Art itself can be the expression of creativity and may or may not involve engaging in an aesthetic sensibility. However, understanding art and experiences aesthetically is also a way of interacting with visual culture in a time where students need to decode values and ideas in art (Eisner, 2002). The arts can help
students find aesthetic value in everyday lived experiences (e.g., experiences of beauty in nature) that are meaningful to their lives and bring understanding and connection to place and nature.

Aesthetic qualities are not exclusive to the arts, but when the senses are awakened, students can be emotionally receptive to art. One of the surest ways to have a connection to nature is through direct sensory experience. As noted earlier, Kant believes this capacity to experience beauty in nature exists in us *a priori*, as a constituent part of reason, to achieve a certain *telos* (end): to help us bring about a good society – which in the modern context must necessarily mean a sustainable and just and inclusive society. Whether or not Kant is correct in every detail of his theory, the fact remains that aesthetically pleasing experiences of nature are a potentially valuable part of Environmental Education, which educators can help facilitate through activities such as nature writing, working into the curriculum opportunities for such experiences.

### iii. Sensory and Embodied Learning

Educational theorist John Dewey (1900/1963) defined education within, by and for experience, and found the true goal of education was to appreciate living in the present and to enable rich sensory experiences that foster continuity and interaction. Art can be a means for engaging in aesthetic and experiential experience. Educational experiences that result in an aesthetic appreciation of nature’s beauty can be transformational (Eisner, 2002) and while not everyone experiences nature in this way, the potential is there. With some students, there is a lot of socially conditioned *biophobia* to overcome. Art can provide an opportunity to engage with nature and connect to it on a sensory level. The practice of nature-oriented art making, such as nature writing or making videos, for example, can become embodied sensory experiences that help students forge a deeper connection to the environment and witness nature through a more engaged lens. Students in partnership with OCAD (Ontario College of Art and Design) beautified their schoolyard with sculptures made of recycled waste materials, and other students made sculptures of

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22 Fear of nature is often promoted by the mass media’s stories of things going wrong outside in nature because these are sensationalist stories that sell.
animals using clay (Chiarotto, 2011, p. 92). Direct experiences—which involve sensory learning—are a way to establish a relationship to the environment and engage students in self-expression and creativity. People of all ages are drawn to the sensory experiences that the arts can provoke and invoke in our lives. As Viktor Lowenfeld (1947) reveals in *Creative and Mental Growth*:

> It is only through the senses that learning can take place. This may seem like an obvious statement; however, its implications seem to be lost in our educational system. It may be that education merely reflects the changes in our society, for man [human beings] seems to be relying less and less on actual sensory contact with his [or her] environment. He [or she] is becoming a passive viewer of his culture rather than an active maker of it. (as cited in Karl, 1977, p. 31)

Philosophers and educational writers Abram (1996) and Gradle (2007b) present that idea that our sensory perceptions of place and the world are shifting into not only what we know from direct sensory experience, but also what we can imagine: the imaginative properties of the embodied experience. In Kantian terms, the sensible world provides the experiences necessary for the formation of supersensible imagination (thoughts and ideas that exist only in the noumenal realm, but are informed by intuitions of the phenomenal world). In other words, memories of actual sensations provide the grist for imaginative experiences, just as in dreams. What we imagine is just as important as what is. From a Kantian perspective, supersensible imagination allows for the creation of ideals which are necessary for human beings to reach their full potential and to help guide society (York, 2009). Experiencing learning through the senses connects us to our creativity and allows for active participation in the world. The possibilities for intrinsic reward, total engagement, and optimal learning are available when the senses are awakened. Transformative learning involves reflection, interpretation, and making meaning of one’s experience. This can begin with sensory learning.

**iv. Meaning Making**

Art provides ways to interpret and navigate the complexities of the mind and relationships.
Life experiences find meaning in context. Students are constantly trying to interpret and make meaning of their lives and learning. Meaning, as Eisner (2002) argues, “is not limited to what words can express” (p. 230), which is why the arts are so valuable for communicating our ideas and emotions. While some meanings are found in ‘readable’ language, others need to be represented and shared in alternative ways. The arts provide ways for us to construct new meaning and interpretations (Eisner, 2002). There are multiple sources of meaning making and the arts are ideal for communicating differences. The Reggio Emilia program, founded in Italy in the 1960’s, has promoted the idea that every child is unique. Children grow in unique ways. As such they can communicate in one hundred languages: song, dance, play, painting, thoughts, listening, and so on. These symbolic languages are inclusive and recognize that language is not restrictive, and writing is just one of many ways of expression. The program has also been very successful in integrating arts into learning, counteracting the dichotomies in education such as “art vs. science, individual vs. community, child vs. adult” (Gandini, Edwards & Foreman, 1993, p. xi).

The arts are “among the resources through which individuals recreate themselves” (Eisner, 2002, p. 240). One important principle for holistic learning is the development of a relationship with the self. Art give us a way of representing our ideas, our feelings, and aspirations for the world. This is especially important for students who are seeking ways to articulate their emergent relationships, including relationships with things seemingly abstract and larger than themselves, yet which are also real and of which they feel a part (e.g. a community, a place, a culture, the biotic community, the universe). Art helps with identity-formation.

Although finding and making meaning is an important part of education and learning, it is not everything. Philosopher Hans Gumbrecht’s (2004), in his Production of Presence: What Meaning Cannot Convey, demonstrates that Western culture and the humanities are obsessed with interpretation. He argues that by decoding meaning, learning and interpreting what things mean (or do not mean), and by finding and assigning meanings in general, the humanities and the arts are always interpreting and re-interpreting and trying to qualify everything. The rise of psychoanalysis
since the early twentieth century, according to which dreams and art are thought to have hidden meanings, has certainly contributed to this trend, but even before that Western literature and philosophy was highly textual and symbolic, trading in hidden symbols and meanings. Northrop Frye (2007) in *The Great Code*, explains that our tendency to search for meaning in art and literature arose from emphasis on the importance of multivalent meanings embedded in Biblical texts. Gumbrecht (2004) suggests that we oscillate between meaning and presence in order to better understand experience. Presence is an important aspect for experiencing nature and the creativity it allows. The effect of presence is a direct appeal to the senses. An embodied experience brings us closer to presence.

Gumbrecht’s (2004) analysis seems to reify a famous philosophical dichotomy identified by Kant (2000) as the *noumenal* and *phenomenal* realms, corresponding to the sensible world and our interpretation of it within imagination, which can lead to supersensible (metaphysical) ideas and ideals that utilize intuitions of the sensible world but shape them into new meanings. The interplay of sensory experience and interpretive meaning helps define everything that we are, how we engage with the world and one another, and negotiate life. This is very much an ongoing process, one that I believe is universal and not, as Gumbrecht suggests, only derived from Western experience. Dewey (1897) believes that education is “a process of living and not a preparation for future living” (para. 11). Art can guide students in this ongoing “process of living,” in large part because the experience of art is one of ‘flow’ and creativity. It is not, ultimately, about the end product, but the process of creation (or for the viewer or listener, the process of taking it in). This is evident, in particular, with music and theatre, which necessarily occur in the moment, but is also the case with other arts, since all art entails a creative process.

Returning to Gumbrecht’s (2004) distinction between experience and interpretation, I would add that with art creation, the interpretive process is integral to the creative process, and also beyond it: after the process of creation, during the process of trying to take in an artistic production, and during viewing or listening. This latter process can connect two people separated by time and
space through a common subjective experience catalyzed by the experience of absorbing the artistic creation at a sensory level and then incorporating that experience into interpretative meanings. This is a process of shared representations of subjectivities, which may be thought of as the foundation of meaning-making in all human cultures. When students share their poems or videos with one another, they are sharing their interpretation and response to an experience. These representations are often personal and emotional. For this reason, I would contest the dismissal of art by those obsessed with advancing the paradigm of endless economic growth, part of the “cosmology of domination” (into which the arts do not readily fit), and suggest that, on the contrary, art has a valuable role to play in shaping collective human identities.

The history of art, from Paleolithic times to the present, underscores my argument, since art has been an integral part of human cultures, religion, and identities since before human civilization came into existence. In the present context of climate change, art can serve as a vehicle for helping to transport us beyond the narrow and stifling paradigms that restrict our imaginations, towards a new sense of freedom and hope and creativity, tied to an Earth-centered identity, which Berry (1988, 2000) and Orr (2004, 2005) argue that we, as a species, need now more than ever. I believe this process should start in the classroom, to lend validity to art, since children are all too easily discouraged from creating it when they learn from our society that it is not valued. Art is a way towards understanding and representing the many voices of the natural world, and our place in it. As with biophilia and love of animals, the natural inclination to draw and paint is encouraged only up to a certain age (usually middle childhood). Educators themselves relate that they were discouraged from pursuing the arts at a critical age in their identity development (Personal communication, November, 2012). Educators and parents need to emphasize the opposite lesson: that art is valuable, for both the students and also because of its enormous potential for helping effect needed social transformation through new ways of seeing the world.

iv. Finding Flow and Creativity

People learn best when they are interested and engaged in learning, involved in what Mihaly
Csikszentmihalyi (1990) calls the “optimal experience of flow” (p. 54). Csikszentmihalyi defines flow as process of engagement in an activity that comes automatically and effortlessly, yet requires a high state of consciousness (p.110). It is not done for extrinsic reasons (such as marks or money or social status), but for intrinsic reasons, for the sake of doing it itself. When people are engaged in creating something, they are can be described as being ‘in the flow.’ Importantly, this ‘flow’ is achieved by the experience of ‘doing in the present’ – referring to the process as it occurs in the present moment. The experience is rewarding in and for itself. Enjoyment comes from being in the flow of an activity. Csikszentmihalyi relates that flow can occur when abilities are matched to the opportunities for action. At that point there is immediate feedback, clear goals along the way, action and awareness are merged, distractions are excluded from consciousness, there is no worry of failure, self-consciousness disappears, the sense of time becomes distorted, and the activity becomes autotelic, referring to that which is an end in itself (pp. 110-113), as opposed to being a means to an end (telos). There are cases where the activity is done for its own sake and when the participants are enjoying themselves. Autotelic learning can be contrasted with more teleological learning that has a future application or extrinsic purpose or end; as a consequence students engaged in this latter sort of learning can easily become bored and discouraged with the routine of learning. The arts have often been associated with autotelic flow, creativity and complex thought because they require skill and engagement. Learning that is primarily textual and requires memorization can be described as teleological, a means to an end, whereas the creative processes unleashed through the arts can be described more as autotelic, an end in itself.

The experience of flow is an important one for Environmental Education and bringing learners into alignment with nature. As one student related: “You’re so involved in what you’re doing, you aren’t thinking about yourself as separate from the immediate activity. You’re no longer a participant observer, only a participant. You’re moving in harmony with something else you’re part of” (as cited in Csikszentmihalyi, 1990, p. 54). This kind of synthesis can occur when learners are creating environmental art. It is also an opportunity that Clarke (2012) defines as the transition
from “ego to eco,” by which he means that we formulate our set of interests and values away from self-interested, narcissistic endeavours and goals to ends that are more aligned with a social and environmental good (p.33). Like Berry (1988), Clarke argues that the environmental crisis is accelerating because we have not changed our narrative, and subsequently our metanoia conversion, which is literally a “fundamental transformation of the mind” (p. 30), has yet to occur. The transformation from an ‘industrial mind’ (roughly corresponding to the ‘ego’ side of the ego-eco binary) to an ecological one can occur through intuitive, fluid narratives that are emergent and layered, facilitating new metaphors that help us see things differently (Clarke, 2012; Hundertwasser, 2006). Given that human beings are fundamentally visual and narrative-based learners, evident in the countless myths and ancient stories that have informed human worldviews for thousands of years into the present age, it makes sense that the arts (both visual and narrative) should be used as vehicles for conveying new paradigms. They also can help facilitate a ‘paradigm shift.’ The climate crisis and its solution should not remain the sole domain of climate science, political science and economics. Art has a vital role to play in helping to re-imagine what it means to be human at this time, just as it has played a significant role in human imagination and cultural identity from the time of our first emerging as *homo sapiens sapiens* (Apostolis-Cappodona, 2006). The creative process that takes place through art involves the ability to invent “new symbols and ideas, to improvise on established symbols, to rearrange established organizations into new organizations,” and to find an emergent action that grows out of the uniqueness of the moment (Karl, 1977, p. 33).

Learners have expressed feeling a sense of flow when they are being creative. Flow, as defined by Csikszentmihalyi (1990), is as an optimal experience and involves creativity. Creativity may be defined as any “human act or process that occurs when the key elements of novelty, appropriateness, and a receptive audience in a given field comes together at a given time to solve a given problem” (Warner & Myers, 2009, p.33). Creativity and the arts may be deemed to be important elements of education insofar as they provide new modes of learning that unleash the
creative potential of students, representing an act or process (rather than only a product) and activating their imaginative faculties in ways that traditional education may not (Evans, 2009). As Warner and Myers note, creativity can be problem solving, a confluence of elements and actors. Given that the climate crisis is one of the biggest challenges facing humanity at this time, it seems appropriate that human creativity should be brought to bear in searching for solutions. This process will be facilitated by opening up new conceptual spaces in the human imagination necessary for re-imagining the world in a more sustainable way that recognizes that humans are not at the center of all life and that other species co-exist with us on this planet.

Practically speaking, this shift towards a more biocentric perspective would have the result of shifting our priorities away from endless consumption to consideration of the needs and interests of other species, ecosystems and, more abstractly, the biosphere. We cannot naively assume that a technological solution to the climate crisis is forthcoming, or that governments or corporations are able to properly address this. It is a moral imperative of the first order for educators to consider how education may play a creative role to address this challenge.

Artists and students who are engaged in creating art feel this sense of flow when they are engaged in a creative process that they enjoy; they are able to see things differently. Students have defined the feeling of flow as “exhilarating” and “you’re ready to tackle anything” and you are not “aware of self” (p. 54). Not everyone loves to make visual art, or create music, but everyone has a creative inclination that they may or may not have explored (Csikszentmihalyi, 1990, p. 107). Appealing to many different learning styles, art can be viewed as a discipline or process that can help us discover creative connections to Berry’s “Earth story.”

Our interactions between nature and the self, nature and culture, and art and environment are complex. Plato relates that the task of education was to “teach the young to find pleasure in the right objects” (as cited in Csikszentmihalyi, 1990, p.124). Somehow, we need to be successful in teaching our young learners to take pleasure in the ‘right things’ such as empathy for others, community values, valuing the beauty of the planet and being inspired by a starry night. In other
words, there is an ethical dimension to education that is all too easily lost when the emphasis is on pursuing self-interested goals and skills learned in order to advance one’s career. Equally important is to teach young people, including future generations, to be responsible members of society, and to consider the good of all. This can occur when imagination is stimulated, creativity is nurtured, and innovating thinking is inspired (no9.ca). Art can teach skills such as persistence, engagement, and envisioning, which are an important part of living in a changing world. Creative minds can become the pioneers of culture and models for the future.

Two of the world’s most influential art educators, Viktor Lowenfeld and Sir Hernert Read (Eisner, 2002), believe that creativity is a natural and necessary impulse that gives freedom and flexibility to the child (p. 32). Both educators believe that the arts may be thought of as a process of emancipation and outlet for creative impulses and as a means for human development. Read argues that “self expression cannot be taught” (as cited in Eisner, p. 32), but is ‘caught’ (referring to the process of self-discovery and awakening) by the learner whose teacher guides him or her to the place of learning. The teacher can act as a catalyst for awakening a pre-existing creativity in the student; for this reason it is not taught, it is “caught.” This approach to creativity and creative expression is important for this study insofar as students are able to explore their intuitions and impulses through inquiry-based learning. Creative exploration and expression often happen when students are in the ‘flow’ (e.g., the dynamic creative process). In an interview, Csikszentmihalyi (2002) reports that most ‘flow’ in education occurs in extracurricular activities such as art classes, running a newspaper, band (music), and when people are able to either work together or in an activity that has set goals (para.2). There is less flow in the core/mandatory academic curricula, because there is less opportunity for personal creativity. This represents an important idea: optimal flow occurs when students are involved with creative projects that are usually elective and that involve play.

v. Play and Inquiry

Children naturally want to play. Youth and adults have a natural impulse to play, but it is
often repressed (Cameron, 2012). Play involves freedom and flexibility and it is usually fun. Play, as Eva Balke (1997) writes, is a little “like being in love. It is full of promises and surprises. Play is like nature itself, easily destroyed or disturbed” (p. 355). Play can be upset when one is forced into the act. If a student is told to write a story, the element of play can disappear. Play has been characterized by the fact that means are more important than the ends (Christie, 1991; Rowe, 1998). Students express feelings of flow and creativity when they are making art, but they also indicate that they are led by their curiosity, which is a vital element in play. Exploratory play involves experimenting and acting in different social situations, with people or things (Rowe, 1998, p. 13). People are naturally curious, and born to explore with their senses, their imaginations, and their knowledge. As Balke notes “it is hard to decide by observation alone at what point exploratory activity stops and when play begins” (p. 355). When students feel safe enough to try out new things and experiment, real learning and engagement can begin. Play can be a learning process but it is also a means for creating culture. Play becomes a “cultural workshop” for children (Balke, 1997, p. 358) in which they are encouraged to be creative. This idea is particularly relevant to the theme of creative play for the purpose of advancing the intersection of environmental inquiry and the creation of art. The use of art for Environmental Education may be envisioned as Balke’s “cultural workshop,” helping to re-envisage what it means to be human against the backdrop of both local environments and more broadly, the “universe story.”

The communicative arts provide multiple ways to connect with nature, some tactile and visual and auditory “Words suffice in a world of words, but fail in a world of things. Environmental Education deals with things” (Karl, 1974, p. 24). While this emphasis on things is important for sensory learning, I would also argue that there is a human desire to express what we feel through words, insofar as words are vital to narrative arts. If, however, words are all that are used, that may be insufficient. Therefore Karl’s (1974) emphasis on things is also important. Eisner (2012) suggests that art breaks through the boundaries of convention and releases the creative impulses that we all have as children. Art can challenge anthropocentric tendencies, articulating the
vision for transformative Environmental Education and planetary survival (O’Sullivan, 1999; Berry, 1988). It can provide the means for the articulation and expression of a relationship with the other and with the self, consistent with Bateson’s (1972) “ecology of the mind” (p.10). Art can involve rational faculties, but is primarily operative on the level of an emotional connection and engagement (Dirkx, 2006, as cited in Lawrence, 2012, p. 472). It can serve as a channel for deep emotions, and a guide as to how to negotiate difficult emotions, which is particularly useful for young people struggling to come to terms with a potentially bleak future and their role within it.

vi. Spiritual and Compassionate Awakening

A sense of the sacred in nature was a central part of most aboriginal peoples in human history. It also served as the basis for agricultural connections to the natural world through intimate awareness of the seasons and weather and other animals (all vital to pre-industrial agriculture). This sense of the sanctity of nature was a dominant part of human collective understandings of the world up until the European Enlightenment and subsequent Industrial Age, when nature was reconceived mechanistically according to the Newtonian-Cartesian synthesis. Prior to that time, the Earth was thought as a dwelling place of spirits and life, a living breathing organism reflected in the cycles of the seasons and the animals (Beaton, 2013). Art and the natural world, people and animals, the sky and the Earth, were one indivisible whole made up of parts. This spiritual view of the world is ancient and to a large extent grounded in worldviews the modern world has abandoned.

Spirituality is often taboo in secularized public education, especially when it is equated with religious traditions. However, spirituality and traditional religion are not necessarily the same. University of Toronto professor Andre Maintenay (Personal communication, May 2, 2013) argues that secular environmental concerns can be expressed through spirituality, or even be thought of as a kind of spirituality, and that this is not the same thing as religion, at least in the widely accepted definition of it. If one chooses to define religion more broadly, according to a functional definition

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23 This concept of a living, breathing Earth, personified by some aboriginal traditions as ‘Mother Earth’, is in part echoed in more scientific terms by James Lovelock’s (2007) Gaia theory, which suggest that the Earth and all of its living systems are one self-regulating organism.
– as does the United States Supreme Court, for example, which equates it with a ‘creed’ or worldview – then a secular environmental concern could be deemed a kind of religion, along with other secular ideologies such as capitalism, consumerism, fascism, communism, and socialism (York, 2014). In defining spirituality, some educators have called it a ‘soul-based’ or a ‘heart felt’ approach to teaching and learning (Miller, 2000). Spirituality, according to Dewey (1934/2005), is a natural state of being, one which ‘art as experience’ supports. Spirituality, which Rolland Romaine termed the “oceanic feeling” (as cited in Freud, 1927/2004), can occur in any experience that comes from a place deep within, and many have felt this experience in relation to nature, designating the practice of engaging with this experience as ‘nature mysticism.’

What we can glean from all this is that the terms ‘spirituality’ and ‘religion’ are so ambiguous and multivalent that it would be impossible to say with any certainty that spirituality is the same or not the same as religion, but for the same reason it would also be impossible to say capitalism and consumerism are not religions of a kind (as David Loy (1997) contends, for example, in his essay “The Religion of the Market.” The educational system trains students how to function with a consumer society (O’Sullivan, 1999). Thus, to shy away from the term spirituality on account of its supposed relation to religion – when religion cannot even be properly defined – does Environmental Education a disservice. Environmental Education can draw on spirituality and also, for that matter, on religious traditions for valuable insights and lessons, as the Forum on Religion and Ecology at Yale (2014) has stated. Steven Glazer (1999) defines spirituality in education as follows:

Spirituality in education is about intimacy with experience: intimacy with our perceptions – the experience of having a body: our thoughts – the experience of having a mind: and our emotions – the experience of having a heart. Spirituality is education rooted in experience . . . it arises out of our unique, particular mingling of awareness, experience, and expression. (p. 2)

If we choose to define spirituality in this very broad, experiential (and thus universal) way, it is
particularly helpful for Environmental Education. The experience of having a body, mind, and emotions is fundamental and universal; it is not the sole domain or expression of a particular historical religious tradition or culture. Spirituality may also be thought of as compassionate experience and a care for all living things, for the self, and for the future, and as a purposeful and peaceful way of life within the community (Miller, 2008). Spirituality can be defined as a desirable natural condition for being in the world, accessible through our experiences with nature and one another. Many people are attempting to relate to their place in what could be called a spiritual way (according to this broad definition), disenchanted by mechanistic technocratic world, which for them is void of meaning.

One does not necessarily have to subscribe to the categories of traditional religious beliefs in order to have a spiritual experience, as defined above. Although a spiritual feeling may be thought to reside in the emotions and imagination, frequently pictured in terms of dimensions beyond our senses, the foundation for such experiences lies in close identification with sensory experience, accessible through the practice of mindfulness (to use a Buddhist term) (Miller, 2008). Coming to our senses and being in what Csikszentmihalyi (1990) defines as ‘flow experience’ can occur through the arts, as well as the experience of being in nature, and both experiences can foster a sense of connectedness with the world. The painter Kandinsky (1977/2012) recognized the connection between art and the soul (or psyche or anima, from which the term ‘animal’ derives) when he described colour as the “power which directly influences the soul” (p. 25). I have also had the experience of finding a connection between the soul and nature, which was fully realized in the creation of art. I had the experience of flow in the conception and the writing of this poem, *Sway of Grace*, one morning right as the sun came up over the trees lighting the branches:

- the old oak shakes
- me from half sleep
- her arms pulling me in a sway
- alive with spirits
- reaching for another soul
to commune with
I feel now deep within me
the same spirit that imagined me
birthed me, is
song, sparrow, sway of grace,
the dog heaves sighs in the darkness
a part of the whole, but
light comes too soon
the hard business of being human
tosses me in the street,
with mirrors everywhere (Rachel York, Toronto, ON)

The experience of art can challenge us to connect to others and to the self. It can also be a place of autonomy from the world created by human beings, a place to rediscover fundamental realities easily forgotten in that world. In subsistence-based economies, spiritual and physical connections to place and environment are commonplace. In urban, technological settings they are not. Today, educators must nurture and cultivate those connections, for the emotional (and one could also say, spiritual) health of the students themselves. Gradle’s (2007a) “A Spiritual Ecology: Finding the Heart of Art Education” brings art into alignment with the ecological enterprise of biocentric and holistic educational models. Promoting environmental philosophies such as deep ecology or eco-feminist ways of knowing, according to Gradle, will help to develop mindfulness and ecological practice, because of their stress on embodied ways of knowing. Gradle contends that imagery in the arts provides linguistic symbolism that aids in developing what she terms an ‘embodied mindfulness.’ To participate and engage with the Earth and one another (e.g., sociality and community building) runs counter the patriarchal tendencies to suppress and dominate the Earth. Art can help us become soulful and engaged with the Earth. Spiritual connections to the Earth can help us recognize our essential sameness across species (as fellow Earthlings), and forge a peaceful, just, and sustainable relationship with the biotic community. It can foster compassion and ‘ethic of care’ (as identified by the feminist care ethic of Carol Gilligan (2003) and Carol J.
Adams (2010)). Art, as I describe it above, is one means for accomplishing this goal. There are undoubtedly other means, but the practice of art is socially acceptable and readily available to students, and thus a practical avenue for fostering ecological identity.

vii. Forging relationships

Relationships exist naturally, but it is the special domain of art that allows us to understand relationships in different ways. For instance, when we see a work of art, we respond to the work in our own way, and sometimes it elicits a response we did not expect. Living complex systems in nature encompass everything, from human communities to animal cells. Everything is connected in a dynamic processual matrix that is non-linear and also (importantly) non-hierarchical. Hierarchies are imaginative structures imposed by the human mind on the world, to help categorize it, but it is a mistake to believe that they exist constitutively in the world. This is why religious and naturalistic hierarchies that promote human superiorism are based on a logical error. Art is similar to nature in that they are both dynamic and rooted in relationships. Students are often able to discern “patterns that connect” (Bateson, 1972) when they make art, and when they are able to experience nature (Capra, 2005, p. 22).

Art can be viewed in much the same way as the fundamental nature of ecology: elements come into a relationship and impact and change one another, creating differences and more differences within one overarching complex web. The artistic process is expansive and unlimited, unlike computer technology which is necessarily limited to the parameters of its programming. Computers, and most technologies, have been shown to homogenize thinking and cultural experiences (Bowers, 2000; Dakin, 2014), whereas art broadens the mind and opens the door to new ways of thinking (Esiner, 2002). Art follows the same processes as the natural world, in part because those who create are living organisms, making and changing and re-connecting through the processes of creation and being. For students, making connections is important for cultivating awareness, understanding and promoting diversity. Nature, like communities, needs diversity and relationships. Composing and putting together art is a way of making something whole in a
Merging experience with imagination is an important part of envisioning oneself as a part of the environment, and making manifest multiple realities. As Cajete (1994) notes: “The creation of art is an alchemy of process in which the artist becomes more himself through each act of true creation. He transfers his life to a dance in relationship with the life inherent in the material that he transforms into an artistic creation” (p. 471 as cited in Lawrence, 2012, p. 149). The role of relationships is identified as significant in the process of transformative learning, particularly in a “re-positioning of relationships” (Taylor & Snyder, 2012, p. 49). Students can find a re-positioning of their relationship to the natural world and feel the presence of nature more intimately during the process of a creative act, such as painting or drawing, or telling a story. This nurturing of presence is central to re-imagining our place in nature. Thomas Moore (1992) in *The Care of the Soul* articulates the sentiment well when he states: “Art, broadly speaking, is that which invites us into contemplation . . . . In that moment of contemplation, art intensifies the presence of the world. We see it more vividly, more deeply” (p. 286). Whether students are acting as the artist or the observer, the most meaningful insights come from the creative process. Seeing things in multiple new ways disrupts our old ways of seeing the world. The arts provoke us to think and feel differently about the world and our role in it.

### III. Art Integration: The Interdisciplinary Function of the Arts

There is a growing understanding among educators and scholars that art is valuable, not only in and for itself (the idea of ‘art for art’s sake’) but also as means for learning other subjects and disciplines (Evans, 2009; Fels & Belliveau, 2008; Bernstein, 2012). ‘Art integration’ with other disciplines is based on the belief that connecting subjects in the curriculum can produce meaningful knowledge and highlight learning (Gablik, 1991; Fels & Belliveau, 2008). In this way, knowledge of diverse areas and topics are brought together in broad themes that can engage learners in interactions. Integration, or interdisciplinary learning, takes place most often in primary and junior
levels and can be effective in renewing school curricula (Miller, 2008). It occurs less often in the higher grades, as learning becomes more fragmented (Orr, 2004). The integration of arts into curricula becomes an important aspect of this learning as it focuses on meaning making and the process of connecting to the environment (Davis, 2007). Nick Rabkin and Robin Redmond, in their work, *Putting the Arts in the Picture: Reframing Education in the 21st Century* (2012) summarizes arts integration this way:

It [arts integration] is designed to promote transfer of learning between the arts and the other subjects, between the arts and capacities students need to become successful adults. It is designed to use the emotional, social, and sensory dimensions of the arts to engage students, and leverage development and learning across the curriculum. Arts integration does not conform to any of the stereotypes of arts education. It requires serious engagement and learning in the art form and broadens the “arts for art’s sake” focus of teaching. It makes creative production a core practice and value, rejecting the standards-free, non-cognitive approach of creative expression or recreation. We might call it the arts for learning’s sake. (p. 9)

Environmental art integration has been popular since the 1990s. Suzi Galik (1991) laid the theoretical groundwork for understanding the role of arts as an aesthetic practice and Blandy and Hoffman (1993) defined a vision for art education of place to address environmental concerns. Valuing interconnectivity has been a particular focus of an arts-and-environment integration. Lankford (1997) explored systems thinking as a way to conceive of art and imaginative solutions to environmental problems (as noted in Gablik, 1991). Others have promoted art as a way toward ecological stewardship and art as ‘purposeful creativity.’ Eco-art usually takes recycled material to make something new, and many schools, students and communities are seeing the benefits of this kind of art. In many ways, arts integration for the environment has become an established part of pedagogy. Eco-art has been successful as a community-based, interdisciplinary, practice that could be described as follows: experiential, interactive “dialogic, ideologically aware, and built on the
values of empathy, sustainability, and respect for the environment" (Inwood, 2010). The following examples of Eco-Art (Figure 13) on public display at Hillerest Community School and Williamson Road Public School in Toronto demonstrate a direct action for and care of local place and space.

Figure 13: TDSB Elementary Eco-Schools: Eco-Art Examples

Environmental Education, according to Song (2008), needs to include the following: ‘direct hands-on experience’ ‘place-based learning and ‘action oriented inquiry.’ An arts-based environmental pedagogy would nurture the interconnection between human beings and the biotic
community. In this way, it is similar to a holistic, integrated curriculum, as it attempts to educate the whole child through interconnections. Holistic educator John Miller (2008) recognizes the importance of interconnectedness and the relationship between the ‘mind and the body,’ the ‘subject connections,’ and ‘relationship to the Earth and relationship to the soul’ (pp. 13-14, pp. 88-89). Miller argues that we need to educate the ‘whole child’ and bridge this dualism of feeling and thinking. Education needs to be an engagement of the “head, heart and hand.” Integration of art into Environmental Education can broaden and deepen our connections to the natural world and create space for re-imagining our place in nature. When the mind and the body and the spirit are engaged, learning becomes relevant to living and being a part of a community. The arts can help us deepen and expand our awareness and imaginations through inclusion, integration and connections (Gradle, 2007a). Students are allowed time and opportunity to ask broader, deeper, and more playful questions of their relationship with “oneself and the world” (Daloz, as cited in Taylor & Elias, 2012, p. 148). Curriculum integration can bring unity and cohesiveness to understanding and learning.

IV. Exploration of the Arts

The medium and the act of expression are intrinsic to one another (Dewey, 1934/2005, p. 66). Feelings that are used in expressing oneself are brought forth over time, which is “itself a prolonged interaction of something issuing from the self with objective conditions” (Dewey, 1934/2005, p. 67). In other words, the expressive act may be thought of as a process, not merely as a static action. In this light, I will explore the different artistic media that are used in this study.

i. Visual Arts and Media Arts

Art theorists and educators are locating visual arts within the framework of visual culture, which describes all the things that affect our sense of sight (Gaudelius & Speirs, 2002, p. 15). Visual imagery can include but is not limited to magazines, television, the Internet, advertisements, cartoons, comics, paintings, and diorama. In essence, the traditional boundaries of art and popular
art are blurred (Gaudelius & Speirs, 2002), which leaves students with the freedom to define what is art and meaning in their own context.

Values, views, ideas and beliefs are reflected in the artistic expressions of a culture, and reproduced by students in their own ways as a kind of visual communication/dialogue. The human imagination filters through the different visual signposts and makes meaning based on previous understandings and current context. In practice, when students are given the materials to inquire, create, and reflect on visual art, it influences their thinking.

ii. Language Arts

‘Language arts’ [often designated by commentators in the singular despite the use of the plural, ‘arts’] is an essential part of the curriculum. Reading, writing, speaking and interpreting language in the curriculum means students are receiving and expressing ideas that concern them. The language arts give students the tools and opportunity to communicate what they know and think about any subject. The language arts, as designated by the National Council of Teachers of English (NCTE) and the International Reading Association (IRA), involves listening, speaking, writing, viewing, and visually representing (NCTE). Critical thinking, through reading, analyzing and communicating one’s ideas, is not just an essential part of the language arts curriculum; it is also important for student learning across the curriculum. Writing and reading are part of the learning ecology, in most disciplines (e.g. history, geography, literature, science). According to Eisner,

Language is the means through which images are given outward expression. Images or ideas can be literal, or they can take shape in literary, poetic or metaphorical ways. Language can influence others through tone, form, content and purpose, but it is only artistic or a language art when it is a vehicle for expression. Language can be considered literally, and conventionally; such as the words in a sentence, but language arts is a

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24 Viewing and visually representing were incorporated into the language arts curriculum later because of the growing presence of media in our culture (Roe & Ross, 2006).
broader, more inclusive concept. It is not limited to “what the tongue can articulate but what the mind can grasp”; in essence, it is an art through which “meaning and mind are promoted.” (Eisner, 2002, p. 342)

Language arts, in the curriculum, aims to guide learners toward organizing and composing their thoughts (Olson, 1962). Educators often believe in the power of language arts to “change the world one person at a time” (Chatton, 2010, p. xx). Given the chance to “explore the intricacies of language, to play with words and their sounds, and to think and make sense of the world,” through the language arts, students are often able to see the world differently (Chatton, 2010, p. xx) and find meaning in communicating their ideas. It is with this in mind that I examine language arts as a vehicle for Environmental Education and environmental inquiry.

Words give us meaning and context in our lives and, for students, being able to express the critical issues of their lives is a powerful tool for living in and changing the world. In my own experience as an English language arts educator over the last decade in higher education, I discovered that most students, when given the chance to communicate freely, could find meaning in writing poems and stories from their own experiences. Language arts can engage students with the natural world. Language can be a statement or an expression, and the former is more generalized (Dewey, 1934/2005, p. 94) which means that expression is an individual way of approaching meaning. It is an instrument for expressing our emotions. For the purposes of this study, language arts include the pedagogical practices of nature writing and eco-poetics. Both practices allow learners to playfully and creatively roam their imaginings, in order to discover new facts, new patterns of thinking, and new relationships in the world and with themselves.

Using language, media and visual arts as a means for re-imagining a relationship with nature, students can inquire, create and reflect on their experiences together to forge new understandings of their role in nature. The capacity for reflection, which can be stimulated by language arts, gives students the ability to consider what they have learned, consider their role in learning, and find a narrative that expresses their vision and hope for their environment.
VI. Creating New Narratives through the Arts

People naturally look to stories and myths to find an expression of things that matter in their lives. As Berry (1988) relates, stories help us understand our past, present and future place in the universe. Art may be seen an irreplaceable way of understanding and expressing our experiences. Poet Dana Gioia (1997) remarks that “there are some truths about life that can be expressed only as stories, or songs, or images. It (art) educates our emotions” (as cited in Evans, 2009, para. 1).

Art and play, some may argue, are not necessary for survival but, in fact, they are a fundamental part of what it means to be human. All children play in order to learn and, according to ethologist Marc Bekoff (2000), play is a vital part of communication between individuals as well as social bonding among mammals. Art and culture, as the Chauvet caves illustrate so well, can help us negotiate between nature and human culture and understand the interface between the human world and the non-human. I suggest in this thesis that the arts are a necessary part of our learning and being in the world. In this way, my study investigates how the communicative arts can connect students to the imaginative process that re-constructs their relationships to place, people and the natural world, and to help them negotiate and map out solution to problems in their lives and communities.

The integration of the communicative arts into Environmental Education functions in a discursive way and helps to make students environmentally sensitivity and aware of the natural world and their place in it. Berry (2000) identifies the ‘Great Work’ of our time as an awakening of the biocentrism embedded in ancient traditions, as well as modern science, in order to find a way forward for the present and future. The ‘great work’ involves moving away from a human-centered worldview into an Earth-centered one, and finding more mutually beneficial, interdependent relationships with nature and nonhuman animals. This is an emotional and intellectual understanding and movement that requires creativity, imagination, cooperation and other ways of envisioning that are non-linear and different from how we generally think and act in a
technocratic, consumerist society. Practically speaking, it requires us, collectively, to stop burning fossil fuels, eating meat, destroying natural habitats for human colonization, and over-consuming and polluting. If we hope to mitigate climate change and conserve water and stop the mass extinction of species and protect remaining eco-systems, we must exercise a ‘reverence for life.’ However, prescribing such solutions will fall on deaf ears if the persons hearing them subscribe to a worldview in which climate change mitigation and mass extinction are considered unimportant. This is why it is important to begin Environmental Education at an early age. To do so may help to instill a more biocentric, animal-conscious worldview, one in which students envisage themselves as active participants in an unfolding dynamic process of world re-construction, and sustainability.

According to Capra (2005), the most useful framework for “understanding ecology today is the theory of living systems,” based on networks which are non-linear (p. 19-20). Living systems are rooted in the recognition of the relation of parts to the whole, from objects to relationships, from quantity to quality, and from content to pattern. These perceptual shifts can occur when one creates art from individual items, or writes a poem about an individual tree in the schoolyard, thereby creating symbolic forms that can represent relationships, connectedness, and contextual thinking. Art can also provide students with “the media and opportunity to shape and communicate their feelings” and let them know their feelings are worthy of expressions and respect (Davis, 2007). This is particularly important, as I indicated in my methodology, when young people relate that they feel their voices and concerns are not heard (Bartsch, 2008). Creative forms of education can be ways for students to express their concerns and anxieties about the future, and their hopes and aspirations about the state of the world and their place in it. It gives them a chance to be heard and to share these concerns with others. Walter J. Hickel neatly sums up the great challenge of Environmental Education:

Fundamentally, what we need is an entire generation sensitive to those (environmental) issues. This is a new mission for education. A whole new profession of creative people must be fashioned who are committed to enhancing our environment for the sake of the
health, the minds, and the hearts of our people. It is a thrilling challenge and a life-calling worthy of the best talent our nation has at its command. Perhaps, it will become one of the highest forms of art. (cited in Karl, 1977, p. 36)

From this perspective, experiencing and expressing the value of Earth’s biotic communities should be a focus in art education. The communicative arts can ignite our senses and curiosity, fill our imaginations and engage learners in a co-creative dialogue with the Earth community. They provide possibilities for meaningful “iconography about the Earth and the places to which we belong” (Graham, 2012, p. 30). The practice and process of art making and viewing can help learners articulate environmental sensitivity and care and provide a means for establishing new narratives for how we are to live. It is, to this end, that I investigate the arts as environmental inquiry and play and articulate how the practice and process of art-making, and the cultural connections created by viewing art, can advance Environmental Education. Environmental inquiry and awareness fostered by the arts and creative thinking enables students to identify with others, which is a necessary component for community wellbeing and Environmental Education, and is ideal for my intended study. Art can teach skills such as persistence, engagement, and envisioning – all of which are important for living in a changing world and finding ways to live in harmony with nature (Evans, 2009).

The second grade students, in the classroom I visited in connection with this study, were given the opportunity to inquire into their place and/or animal of study and then artistically represent their emotional connection, knowledge and understanding of that experience. As noted previously, the purpose of this exercise was to help students identify with others and to forge an ecological identity, which is a necessary component of Environmental Education and important for community wellbeing. A fundamental question guiding the study is: how can the arts in education guide us to see nature and our role in it in a different light? Aldo Leopold (1948), the author of the A Sand County Almanac, writes: “No important change in ethics was ever accomplished without an internal change in our intellectual emphasis, loyalties, affections, and convictions” (p. 246). This
transformation would ideally come from the “role of Homo Sapiens from conqueror of the land-community to plain member and citizen” (p. 240).

It has been argued that the role of educators is not to simply change the “content of our perception, but the very modality of our perception” (Bai, 2009, p. 136). That is, when things are perceived internally and we see the world as a sacred place of which we are part, then our perceptions about it as something external can change. Bai (2009) writes in *Reanimating the Universe* that we need to interrupt habitual thought processes, return to the vitality of our senses, and “come to experience” (p. 145). This process, according to David Appelbaum (1995) involves disengaging from the state of thought construction, as much as possible, and finding a “transition of movement” (p. 24). A second grade student in the class I visited shared her poem, *Spring*, which she wrote while it was still cold outside. She imagined the abundance of life about to spring forth:

Birds in the Trees, tweeting
Making homes for their Babies
Little buds on the branches
Beautiful flowers on the ground
Opening a new flower every day
Each an adventure to see. (March 12, 2012)

Bringing our attention to the detail of buds and birds, the young poet reminds the reader that nature is an adventure for those who look, and listen. The arts, I am suggesting, can bring about a ‘coming to experience’ through movement and feeling.

Hicks and King (2007) also believe the arts can be transformative. The arts can provide an avenue for looking at the world through metaphors: in this way we come to know one thing as if it were another. Metaphors instruct our worldviews and help structure what we think, how we act, and what we do. Using art forms to create a metaphor for how we need to envision change, instead of just talking about it, is an ideal and necessary step in changing the way we see our relationship to nature. For instance, a student group at the University of Toronto International Environmental
Studio uses discarded wood and recycled objects to create eco-art, as a way of recycling, reusing, and reducing and thereby symbolically transforming the way we typically consume, discard and pollute. The recycled wood and objects become symbols of a larger process of cultural transformation. Similarly, *Flowering: An Environmental Art Installation* (2014), a University of Toronto student led community work of art, was created to give students time to reflect on our shifting relationship with the natural world and the transience of all things. Using recycled sawdust, students worked together to create the following art installation at the Koffler Center at the University of Toronto, in May, 2014 (see Figure 14).

![Flowering, An Environmental Art Installation, Toronto, ON](image)

Metaphors and symbols are grounded in experience, but art can mediate these experiences to create change. The Toronto based educational group Project no9, for instance, helps middle school students design sustainable solutions for their neighborhoods. The urban architectural projects are imagined, modeled, and exhibited in Toronto to infuse real-world-place-based interdisciplinary teaching and learning to the curriculum. Project 9’s mission is to “use art and
When we use our imaginations to create new ideas and visions for our communities we are creating relationships, making connections, and connecting to place.

VII. Summary

This chapter explores how the arts are important for Environmental Education. I explore the benefits of art and the role it plays in developing sensitivity and care, an aesthetic and a sense of play and creativity. Thus art can be seen as contributing to the overall development of a more Earth-centered worldview. The arts can allow human beings to re-imagine their place, to design solutions and, collectively and individually, to create the steps necessary for achieving the positive changes they have envisioned (Burns & Frost, 2010). Art, therefore, can be a hands-on learning experience that engages the senses, ignites the imagination and creativity, and fosters relationships. It can open up feelings of ‘flow’ and also illustrates the benefits of play.

As our world becomes more dominated by technologies and industrial development and globalized consumerism, we must wonder what role the media and technology can play in educating children and youth in this envisioning process, to help facilitate learning together and a vital re-imagining of our relationship to nature. This is the question I explore in the next chapter.

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25 See http://www.no9.ca/2.html for more information.
CHAPTER V: MEDIA AND TECHNOLOGIES FOR ENVIRONMENTAL EDUCATION

Though we travel the world over to find the beautiful, we must carry it with us, or we find it not. (Emerson, 1803-1882) (as cited in Tenzin-Dolma, 2008)

I. Introduction

Only thirty years ago (1984 as of this writing) most people did not have personal computers, hand held devices, or access to the Internet. I was a child at the time and recall that only adults took photographs and made videos, and then only sparingly. The differences between childhood in the 1970’s and 1980’s and childhood today can be attributed mainly to changes in technology. Most children today are native to the information age. Some parents allow children to play with phones and keyboards, watch television and become familiar with programming even before they can walk and talk. Many human beings in the economically poorer areas of the world still do not have access to modern technology, although cell phones and personal computers are increasingly becoming ubiquitous. Today, in industrialized societies, computers are commonplace and educators consider them a necessity for teaching (Alliance for Childhood, 2004). The mass media (e.g. print, television, radio, advertising, films, internet) and the hardware that enables them (e.g., telephones, computers, inter-active devices) determine, to a great degree, the materials and ways in which many people shape their sense of self, other, and community. As noted earlier in this study, a new Canadian study (Dakin, 2014) has found that technologies are “re-wiring” the brain. Young people (teens primarily) are using media up to eleven hours a day while multi-tasking, and this is re-shaping the way their brains develop, reducing their ability for deep analytical thinking and sustained focus. Media and technology is deeply affecting our culture, education, and the way people think and learn.
Technologies and media messages can determine the content, and much of the context, of the everyday lives of young people. They are also shaping our view of nature and the environment. People are increasingly pulled into the high-tech world of human design and reaping the benefits of our technological prowess, from travel to connectivity, and time spent in nature is correspondingly diminished. Time that might have been spent playing outdoors, for previous generations, is now spent playing video games or watching movies and television shows on internet movie sites, such as Netflix, or surfing the Internet or engaging in social media (e.g. Twitter, Instagram, Facebook). This technological enchantment – what may be called the lure of virtual worlds – is replacing our connection to the natural world, cultural history, and real community ties (Orr, 2004; Clarke, 2012; Sobel, 2005; Bowers, 2000).

Some may argue that as technology increases, our connection to nature decreases (Bowers, 2000, Louv, 2008, 2012). In contrast to the view that all technology is problematic, creating a “double bind” (Bowers, 2000), this study examines the potential for technological literacy to be holistic. It could potentially “honour the Earth” (so to speak), and it could transform education and students’ views of nature. In other words, personal technological devices and the Internet might be used advantageously in support of the holistic paradigm, opening up possibilities for creativity and self-expression. This is a pragmatic view of technologies: if they are to be used anyway, why not in support of this paradigm? Ideally, there should be less use of technology in the classroom, and more exposure to nature; but in urban centers access to greenspace is limited, and youth are naturally drawn toward technologies. While technologies are not a replacement for exposing students to the natural world, no matter how limited, can they be used advantageously for environmental learning and creating space for creative symbolic experiences with nature?

26 “A 2000 survey of 1,235 parents of children between the ages of 2 and 17 found that 57 percent of children ages 8 to 16 had televisions in their bedrooms, 29 percent had video game equipment, 30 percent had a VCR, and 20 percent had a computer. These numbers are now undoubtedly higher” (Alliance for Childhood, 2004, p. 5).
Symbolic and vicarious experiences with nature via these electronic media can be meaningful, even if they are not immediate or embodied. Technology can serve that purpose.

This chapter begins by defining the culture surrounding media and new technologies, and how they have influenced education, culture, childhood development and human relationships. I acknowledge the benefits of technologies, but I also briefly examine the field known as the critique of technology. Research indicates face-to-face relationships with other human beings and the natural world is critical for students of all ages (Alliance for Childhood, 2004, p. 3). Let us start with that premise and then add the proposition that technologies and media should only be used when a student is capable of critical thinking. The conclusion I draw from these premises is that technology should not replace experiential, hands-on learning in which students engage directly with the natural world. However, given that students are already using technology, it would be well to direct its use to Environmental Education. Therefore, this study examines how media and technologies that are age-appropriate can support student learning that that fosters engaging with the environment and emphasizes the human-Earth relationship in a way that promotes morally responsible action. A new technological literacy takes into account the non-neutrality of technologies, and insofar as it is possible promotes holistic technologies for transformative learning.

II. Technology and Education

i. Standards: In the Classroom

There is widespread recognition that computers, media and technologies have become central to our lives and enmeshed with the educational system. We live in a high-tech world, and children are naturally provided with and drawn to screens and gadgets, becoming competent in their use at an early age. It is a natural impulse to be creative with tools, and children and young adults are natives to the high-tech world we all inhabit. They have grown up in a world defined by Internet and technologies, with easy access to media, and the often unmitigated and uncritical
mindset that comes with it. Some adults and educators are concerned with overuse and addiction to computing devices. Yet, at the same time, schools continue to invest in personal computers and hook up to wireless systems. The usual rational for this, advanced by the technology companies and technophiles, is that technologies and media access will “give children more control and power over their own learning” (Alliance for Childhood, 2004, p. 23). After more than thirty years of multiple studies (Alliance for Childhood, 2004, p. 23) it is still unclear if computers are improving learning or advancing educational goals. However, they have proven costly both in financial terms and environmentally, since they contribute to e-waste, and they are arguably less effective than “integrating the arts in academic classes” (Alliance for Childhood, 2004, p. 23). High-tech learning still dominates the 21st century classroom, and our thinking. As Berry points out (1988), we are still “enchanted” with our technologies.

Standards for educational technology in Canada and the United States often require teachers to integrate computers into lesson plans as early as pre-school (National Educational Technology Standards, 2000; Alliance for Childhood, 2004). The prevalent attitude and standards movement may be, in part, due to the lobbying efforts of high-tech companies (Alliance for Childhood, 2004, p. 35). Yet, according to research, there is no evidence that technologies improve student achievement or learning and there is a growing body of work that questions the emphasis on high-tech classrooms (Cuban, 2001; Crain, 2003). The Consortium for School Networking (CoSN) which is a non-profit group that lobbies for “increase in information technologies to improve education” (Alliance for Childhood, 2004, p. 36) partnered with the Education Development Center (EDC) in research to find that “it is not the availability of technology or professional development, but actual changes in classroom practices that can result in gains in students’ learning” (Kleiman, 2004).

Unfortunately, programming for the standards that are tested, such as reading, writing, and math (Alliance for Childhood, 2004, p. 21) and access to the Internet for research are the most common uses of media and technology in the k-12 classroom setting. That means that students are
less likely to engage in artistic endeavours, or to use their time in imaginative play or activities. They are also less likely to have the opportunity to explore the use of media and technologies for creative self-expression (e.g. movie-making, photography and the use of Photoshop, writing newsletters, drawing and animation programs, music-making programs), and learn different ways of interpreting and using this tool. Allowing student inquiry and creativity to take center stage in any classroom is counter-intuitive to the growing emphasis on standardized tests and computer learning, which tends towards standardization and institutionalization and away from personalized learning. The trend to unquestioningly and uncritically bring media and technologies into the classroom -- including but not limited to wireless connections, computers, hand held devices, and media access -- reflects a greater cultural trend that has been called “faith in progress through technology” (Schmidt, 2008). This paradigm, also referred to as technological progressivism, originally grew out of the Enlightenment vision of the subjugation of nature (Schmidt, 2008), inspired by the aforementioned Newtonian-Cartesian synthesis; so it should not be surprising that technological progressivism and “the cosmology of domination” complement one another, and that Environmental Education through the arts may be thought to stand in contrast to these powerful (and still dominant) social imaginaries.

ii. A Critique: the ‘Extinction of Experience’

Common in the 19th and 20th century social imaginary of a traditional humanities education is the notion of the linear “progress” of humanity, from a lowly “primitive” state to a modern state of technological and civilizational superiority. While this imaginary, in its most explicitly racist form, and has now been rejected by anthropologists, its basic logic continues apace, through neo-colonial development projects which destroy ancient and more sustainable cultures and modalities of being human in the name of progress. Much that is considered modern education does not challenge or question this cultural homogeneity through technology. In fact, students are encouraged to become engineers and scientists and technicians, of every sort, in order to enable and serve the idea of progress. Critics of technology (Yunt, 2001) put forth an argument
that our “hypertechnical culture” (as cited in Dewar & Campbell, 2004, p. 206) reveres “technology at the expense of the human spirit” (Dewar & Campbell, 2004, p. 211). Alternative ways of knowing, such as traditional knowledge from diverse cultures, are usurped by technological advances. This pattern appears in the increasing technologization of education, financed by the corporatization of education. “Progress” in education is equated with the acquisition of new technologies, ignoring the environmental consequences of so doing.

According to Ursula Franklin (1999) the computer is not neutral. It operates as a “prescriptive technology,” the design of which determines the way in which it is used, and is culturally homogenizing in its effect. This line of argumentation can be supported through reference to the philosopher George Grant’s idea that the computer, like the car, “determines the way in which it is used” – by which he means that it is not a neutral device: it shapes the user in various ways (as cited in Schmidt, 2008, p. 46). Franklin states that Internet use creates “asynchronisities of time” (p. 46), at odds with the natural rhythms of the world; that is, it clashes with the “environment” that is a natural human perception of time and space – which can wreak havoc with students’ learning, by creating an Internet addiction and temporal and spatial alienation from the embodied world. This disconnect with our natural rhythms is unhealthy is not only for a child’s development, but advances the ways in which we as a species are separated from the rhythms of nature. To be reliant on technologies over the natural world is limiting to the imagination.

One dominant cultural myth that educational systems promote is that “knowledge, and by implication human goodness, is increasing” (Orr, 2004, p. 9), and the related myth that technological progress equals moral progress. Einstein famously questioned that common assumption with his dictum regarding the impact of nuclear weapons on the world: “everything has changed except our way of thinking” (as cited in Harris, 1995, para. 2). Our rapid increase in data and knowledge, which is important and valuable, should not be confused with wisdom, which cannot be measured and is certainly being lost as we distance ourselves from nature (Orr, 2004;
Louv, 2008, 2012). True intelligence “is long range, and aims toward wholeness” (Orr, p. 11), which is to suggest that the more we insulate ourselves from the natural world, the less we learn and grow, and the less aware we are of our own undoing. The technologizing of education reduces the means by which information is transmitted to terms dictated by the limitations of the computer itself. Spatially grounded, embodied and more interactive ways of learning are being pushed aside in preference for technologically enabled education. Some proponents of technological education have argued that education need not involve physical spaces at all; that it can be done entirely over computer networks --- and remarkably some universities already practice this, despite the fact that there are more ways of knowing than through the transmission of information on screens. It can be argued, contrary to the push by technological optimists for more technology in the classroom (or the dominance of the virtual classroom), that education necessarily requires embodied interaction, which the computer cannot reproduce.

Orr (2004) is critical of the myth that “with enough knowledge and technology, we can in the words of *Scientific American* (1989) ‘manage planet Earth’” (as cited, p. 9). This belief in “technological sustainability,” and the need to “manage” (i.e., control) nature, tends to heap more problems on top of problems, and ignores the complexities of the Earth and all of its multiple living systems which are beyond our limited reckoning and scope. Our current ecological crisis, created by over-reliance on fossil fuel technologies, is a clear indication of this fact. This way of thinking has been identified by Martin Heidegger as *techne*, through which the natural world is seen as “standing reserve” to be used instrumentally (as cited in Lacoue-Labarthe, 1990). It is important that he identifies it as a mode of thinking rather than focusing on actual technological devices, because that is the real point here: faith in technology is not about the devices, but the way in which they affect our thinking, reducing our approach to environmental and life problems to that which can be solved through technologies, rather than dealt with by more holistic means.

“Technological sustainability” assumes a mastery over nature – the very mindset that, according to Orr and many others (Berry, 1988; Bowers, 2000), has led to the environmental crisis. This is the
kind of arrogance and dominance prevalent in anthropocentric thinking that aims to subdue and conquer nature. Overreliance on technology in a world of finite resources is not sustainable. The idea that technology is the best answer assumes that all technology is good and somehow socially beneficial.

As a university instructor and currently a TA in School for the Environment at University of Toronto, I come into contact with many undergraduate students who assumed that technology was the answer, and that it would be able to save us from ecological disasters. The problem with this position is that it puts faith in the technology, and ignores behavioral changes, such as adopting an ‘ethic of care’ (Gilligan, 2003) that can transform how we relate to nature. As previously noted, this faith in technology assumes, wrongly, that as technology progresses, we progress morally, ethically, and socially. This, in turn, has led to what Kant calls ‘moral laziness’ (the belief that we are not required to exercise moral judgment because technological systems that we rely on will somehow magically do that for us)(York, 2009).

Accelerated interest and creation in technologies has led Bill Joy (2004), chief scientist of Sun Microsystems, to warn that we may be creating a “self inflicted extinction;” if we survive, “we are opening Pandora’s box; yet people have barely begun to notice. We are designing technologies that might literally consume ecosystems” (as cited in Alliance for Childhood, 2004, p.7). The growth of so-called “ubiquitous computing” points in this direction. ‘Technology’ refers to a powerful and useful array of tools, but it is not neutral in its effects on users or the environment, and can adversely affect both. This should be acknowledged in light of how technology may also be used in curriculum, teaching, and learning.

III. Culture and Technology

i. Understanding the Non-Neutrality of Technology

Seminal thinker Marshall McLuhan (1994) famously stated that “media is the message,” implying that media constructs the prevalent view we have of the world. Moreover, media has
come to determine, to a large degree, our values and relationships. It has also been argued that technologies shape our culture, such that to “digitize thought and aesthetic expression is to abstract them from their multilayered cultural and ecological context (Bowers, 2000, p. 54). In other words, technology can have an abstracting, reductive effect on independent and critical and creative thought, acting to suppress it. However useful it may be, technology can also separate us from the sensory reality of relationships, cultural diversity, and the natural world.

Educational philosopher and scholar C.A. Bowers (2000) relates in his work, *Let Them Eat Data*, that our obsession with technologies is displacing wisdom with data, and replacing ways of knowing and being in the world with limited symbolic ways of communicating. Cyberspace is a modern cultural experience that undermines the complexity and diversity of traditional cultures. Its programming and interface homogenizes and undermines other ways of knowing, such as oral traditions, and learning through face-to-face interpersonal relationships. The language and codes of computers and those used in media are symbolic norms reproduced *en masse* in order to create meaning and understanding. But because they are mass produced, computer languages and codes, and the hardware through which they operate, reduce human experience to the parameters set by unknown programmers and engineers, making access to knowledge dependent on powers over which the average person has no control. De-centralizing knowledge and practices is critical to a sustainable society as articulated by Franklin (1999), as is E. F. Schumacher and Jonathan Porritt ‘s (2011) practice of “intermediate technology,” which refers to more holistic de-centralized types of technologies, easily accessed and maintained and created by the average person. When technologies are centralized to an elite, that elite is able to exercise hegemonic control over how the technology is used, or even who is allowed to use it, which can lead to social injustices and inequality. The mass production of technology, and the way in which it speeds up human societies beyond a human or natural ability to keep up, contributes to environmental destruction. Holistic / intermediate technology, on the other hand, operates a human scale and, because it is more accessible, it is also more just. Traditional art techniques could be described as intermediate
technologies. Other examples are the bicycle and the windmill. I suggest with this thesis that a creative and critical re-visioning of our technologies, such as telling stories for and of the Earth and for the otherwise silent voices, such as the beaver and the squirrel, can de-centralize knowledge. The way we store and share knowledge differs with our current technologies.

Students can create a culture of care and connection. Culture includes the “intercultural exchanges of patterns, technologies, and symbols” (Bowers, 2000, p.24). Language and technologies are not neutral. The culture mediating the characteristics of technology controls how they are used and, as such, reduces our sensory experiences and our special experiences to mathematical codes. Simone Weil (2007) anticipated this reductionism in her critique of algebra, which she says is like the industrial production line of a factory: it eliminates creative thought and individuality (Schmidt, 2008). Technologies influence character and structure experience (Bowers, 1988). A lot of what we learn is “decontextualized and culture free information communicated through cyberspace” (Bowers, p. 54). In *The Cultural Dimensions of Educational Computing*, Bowers presents a case for the non-neutrality of technology. He argues that modern electronic technology structures experience, much the same way language and culture structures experience. Language, after all, is a kind of technology: it reduces the world to categories and taxa, in order to help us negotiate the world, but in so doing commits the error of creating essentialisms that reduce subjects to objects and persons to things.

If we say that modern electronic technology is central to the classroom we are playing a certain role, subscribing to uncritical assumptions, and performing a cultural meme or imaginary that may be called technological progressivism. We are re-enacting a mimetic social pattern. Social patterns, like the rituals that perpetuate them, direct our feelings, our behavior, and our thoughts as well as how these are shared (Bowers, 1988, p. 56). These patterns can be shaped by natural systems into meanings, rituals and patterns of knowing that are more holistic, or they be shaped by electronic media in ways that Franklin (1999) would call more ‘prescriptive.’ As previously noted,
prescriptive technologies and patterns tend to usurp and marginalize holistic technologies and patterns.

Opportunities for direct experience with nature are lost when children gravitate toward digital screens, digital media, and electronic technologies, usurping the time they could be having contact with flora, fauna, and natural landscapes. Anthropologist Edward Hall (1977) refers to this human biotic relationship, where knowledge is learned implicitly, contextually, and through participatory face-to-face contact as “high context knowledge” and is distinguishable from the more abstracted “low context knowledge,” often found through digital screens. This dichotomy corresponds to Franklin’s holistic and prescriptive technology categories. This distinction can also be drawn in academia, in terms of orientation in relation to learning. For instance, in traditional curriculum, knowledge is “transmitted” uni-directionally, from teacher to students in a hierarchical manner, whereas in a transactional/transformative position, the learning is more interactive, and involves a dialogue between participants (Miller, 2008, p. 10). The one sort of learning is a monologue, and the other a dialogue in which the student has agency, which increases the capacity to learn. Dialogical learning can occur through creative interaction with technologies, although it is limited by the limitations of the technologies used. Thus, with social media, a dialogue can occur, but it is limited by the programming and hardware through which it happens. The ‘uni-directional’ transmission learning position, such as that which occurs when a teacher recites a lesson to silent students, is comparable to television or radio: the transmission is one-way, requiring a passive, inert audience. A transactional/transformative learning position in education, in contrast, involves more engagement, rendering the student a participating subject and agent, not a passive subject (or object), by means of a co-creative dialogue.

Despite the example of social media (above), transformative learning is not fully possible through digital media because it is impossible to completely recreate the intricacies of embodied language and communication between two or more persons, or human beings and nonhuman animals, or biotic systems. Transformative relationships can only occur between living organisms, I
contend, because living organisms are embodiments of infinite complexity and variation and
diversity, engaging all the senses in a way that is simply not possible with digital media, despite
programmers’ best approximation of sensory experience. Wes Jackson (1987), director of the Land
Institute of Kansas, notes that modernized ‘high status’ knowledge via digital technologies is being
promoted in schools, and that the “knowledge accumulated through tradition, daily experience, and
stories, mostly in an informal setting, has [relatively] little status. We have taken this ‘folk
knowledge’ for granted . . . for however complex it might be, it was not all that complicated to
internalize” (p. 13-14).

Professor of Social Studies Shelley Turkle (2012) spent over a decade studying our use of
technologies, and found that they are changing how we relate and communicate with one another,
altering age-old rituals that helped define human relationships. Young people are texting as they sit
next to one another because they feel that they can control their relationships, as opposed to face-
to-face contact, which can be unpredictable. In the past people had more time to reflect, consider
and communicate face to face, which is important for developing an understanding of one another
and for learning to sympathize and relate with one another, but with advanced technologies, and an
increase in texting and social networks, relationships take on distortions and complexities that
never existed before. It is relevant to note here that the landscape of how we relate to each other
and nature has changed dramatically because technology and media has had a homogenizing effect
on how we act and view the world. A twelfth student I met in the classroom I visited, remarked: “if
you’re in a fight and send a text too quickly, there’s no time to reflect, or take it back” (Personal
communication, May 10, 2012). She also felt that the media tends to strip away individuality:

Everything becomes homogenized – we all look the same, talk the same. Everyone wants
to be the same, and it strips away our individuality. Kids in China and around the world are
looking to be like kids over here. And they can be, because they see someone’s YouTube
video and then there are a whole bunch, just like it. We are losing what it means to be
different. My dad used to travel and he said kids in different parts of the world dressed
differently than Americans. I travel sometimes with my family, and I don’t see the
differences anymore. Kids in the Philippines look like me, like Americans. Everyone wants
to be famous. The Internet does that to us. We’re all the same now and we’re all trying to
be noticed. It’s so stressful. (Personal communication, May 10, 2014)

Education and a critical understanding of our technologies can teach our students to be active
socially and morally committed to “representing diverse voice and cultures” (Alliance for
Childhood, 2004, p. 4). Schools, communities and families alike share in the responsibility of
preparing young people to live and learn in a global culture. Students need to understand how these
new technologies are changing their existing notions of place, community, environment and self—that is, how they are being affected. Likewise, educators, students, and communities alike can take
responsibility for directing values that will shape how we use technologies and further define their
usage for transformative environmental learning.

ii. Critical Considerations of a Media Culture

According to David Loy (1997) the fastest growing and most successful ‘religion’ of all
time is consumerism and the ‘religion of the market.’ If we choose to adopt a functional definition
of religion, then Loy is correct. The mass media (e.g. advertising in particular) is partly responsible
for the high level of consumerism in industrial cultures, contributing greatly to environmental
degradation (Gruenewald & Smith, 2008; Orr, 2004; O’Sullivan, 1999). Young people are given
credit cards and taught to be consumers, instilling them with artificial desires for things they don’t
need and cannot afford, in order to attain social status with their peers. They internalize the lesson
that they must fulfill their desires for certain goods at any cost, or risk being socially ostracized.
The mass media teaches aggressive, anti-social, and otherwise risky behaviors, through countless
examples of gratuitous violence, glamourization of dangerous behaviours, and widely available
pornography and sexist images that objectify and diminish girls and women (Brown, Steele &
Walsh-Childers, 2002; McHale et al., 2009). Violent video games have been linked to an increase
in aggressive behavior. The increased and ubiquitous sexualization of girls and women in
advertising has been linked to low self-esteem, eating disorders, and the objectification and violence against both women and girls (American Psychological Association, 2010). Stories and images we see in the mass media become the main stories and resources that define much of who we are, culturally and socially. They influence how children and youth think, behave, interact, and see themselves and others (Duncan & Arcus, 2005). Mass media takes on seductive qualities, dominating our attentions and energies, which can undermine human potential and creativity (Gruenewald & Smith, 2008). Through ubiquitous marketing campaigns – many of them specifically aimed at young people – it is shaping the very fabric of our everyday lives, worldviews and behavior (Duncan & Arcus, 2005).

While electronic media has provided unprecedented connectivity across vast geographic spaces, allowing virtual communities with common interests to form group identities (e.g., Facebook), this apparent benefit is negated by the loss of embodied social interaction, face-to-face meaningful engagement with others and more natural environments, and the loss of cultural identity. The use of electronic media tends to isolate people and create virtual identities unconnected with embodied reality. The amount of time youth spend in media-oriented activities and in virtual worlds, however social in nature, has been viewed as a constraint to their positive identity development (Sandberg & Hofferth, 2001; Huston & Wright, 1998). One student in the sixth grade class I visited remarked, in conversation, on the increase use of cell phones among her peers: “We text a lot where we used to talk a lot more, and just hang out together” (Personal Communication, April, 10, 2012). Some young people recognize the negative effects in their own lives, but are compelled to continue using texting and cell phones, due to the need for socialization and peer acceptance.

Yet despite the dangers and losses inherent in the use of technology, it can be argued that media and technological literacy can be useful for Environmental Education and learning. The potential benefits of media need to be examined for a complete view of how it affects students’ worldviews and their ritualized behaviors, when coupled with an engaged literacy for ecological
awareness and sensitivity. Media culture can compel students to conform to dominant social norms, such as consumerism, but when used in connection with Environmental Education it can also empower them to become creative agents in environmental protection. Learning to be literate in this new mediascape, students and educators can begin creating the relationships they want to experience, such as an environmental sensitivity toward others and all life, as well as a connection to one’s own place. Environmental ideas and themes, such as the ‘reverence for life’ and respect for nonhuman animals, and the need to challenge the structures that make climate change and the mass extinction of species possible, can all be shared through social media. Facebook, for instance, can be used to create virtual communities of like-minded persons dedicated to a common cause such as animal rights or climate justice.

New portable apps and technologies are now available for students to see historical images of Toronto while they walk through neighbourhoods, comparing past images with the present and considering the changes that have occurred. Coupled with a creative program, such as No9, 27 which teaches children to creatively propose and create models for re-designing their own neighbourhoods for sustainability, students can be using historical photos, technologies, and creativity to imagine changes where they live. This kind of place-based learning can occur when the power of artistic imagination is coupled with a desire to connect with and re-imagine nature in the city, using technology and media as tools.

The North American Association for Environmental Education supports the use of Computer-aided Environmental Education accompanied with the understanding that computer-aided Environmental Education is potentially positive when used to promote learning and experiences (Hollweg, 2011). Time in nature, such as being in the midst of a mass migration of birds, is far more valuable than watching a video of birds in migration; but this is not always possible, which is in part why such technologies may still be considered useful. Its usefulness, I

27 “No.9 is an arts organization that uses art and design to bring awareness to environmental concerns. We deliver programs in schools and in the public domain designed to encourage the use of creative thinking to resolve environmental issues and to promote a sustainable lifestyle” (http://www.no9.ca/about.php).
contend, is that it provides tools for creativity and expression, connection and creation of art. The possibilities for using the Internet, both unregulated and interactive, as a means for shifting one’s relationship to nature and adopt a biocentric or Earth-centered worldview is speculative and the subject of another thesis. The Internet has enabled an information explosion of ideas and images, but these necessitate critical investigation of consumption and production, and how they foster relationships, including those with the life systems of Earth.

Alone, technologies do not make students more intelligent, or compassionate (Orr, 2004), but their potential to engage students in communication, creativity, and partnerships is useful as a pedagogical tool. This is a contradiction or paradox – between the utility of technology and its dangers -- that educators need to address in the classroom and discuss with students. Awareness and reflection on the role of technology in our lives could help shape a pedagogy for critical media literacy.

IV. New Literacies

i. Definitions for the 21st Century

Technological literacy is far more than simply learning how to use machines and gadgets. Given our the understanding that a beneficial relationship with technologies derives from an engaged healthy relationship with the natural environment, the Alliance for Childhood’s (2004) resource guide, *Tech Tonic: Towards a New Literacy of Technology* redefines technological literacy, as “the mature capacity to participate creatively, critically, and responsibly in making technological choices that serve democracy, ecological sustainability, and a just society” (p. 54). This literacy means acquiring the skills such as “a capacity to think critically and creatively, for one’s self, about the design, use, and evaluation of technologies to serve personal, social, and ecological goals” and “love and concern for all living creatures that directs decision-making about technological issues” (Alliance for Childhood, 2004, p. 54). These skills demonstrate that
ecological concerns are at the forefront of a new technological literacy, and how students need to define their relationship to those technologies.

Media literacy is defined as a “framework to access, analyze, evaluate, create and participate with messages in a variety of forms — from print to video to the Internet. Media literacy builds an understanding of the role of media in society as well as essential skills of inquiry and self-expression necessary for citizens of a democracy” (Center for Media Literacy, 2011, par. 1). Teaching students how to critically challenge privatized commercial media culture, and to find new and creative avenues of communication is central to Media Studies in the Ontario Ministry of Education (2011) curriculum.

Schools and educators are aware of the potential of media as a communication tool – one with which students are already familiar – to help them think and learn, relate and relay information. Media Literacy and technological literacy aim to promote critical thinking and creativity (Ontario Ministry of Education, 2011). Just as mindfulness, awareness, curiosity, and reflection about our natural environments are at the heart of Environmental Education (Miller, 2008), I will propose that they are also at the heart of literacies for the 21st century and can define our relationships to our tools, to others, and to the Earth. Self-reflection can offer a heightened understanding of our immediate environment and sense of place in the larger Earth community, but also how we use technologies and why. The creation of a sense of place provides the basic foundation for environmentalism, literacy, and a connection to the natural world (Thomashow, 1995). Reflective introspection is particularly important in a time when media enchantment and virtual worlds are prevalent in students’ lives.

From an ecological perspective, environments provide opportunities and settings for everyday experiences and activities (McHale, et al, 2009). Activities that engage a sense of ‘flow,’ self-realization, interest, competence and connectedness can promote positive identity development (Kroger, 2007; Slavin, 2006). Activities are often viewed as an important factor in connecting youth to their peers, families, communities, and natural environment (Kehily, 2007). It is also these
activities that may define and develop students’ lives by engaging their skills and knowledge and enabling social interaction with others. Youth are subject to contextual forces, including everything around them from day to day, as well as more digital and abstract forces (Bronfenbrenner, 1979). The ubiquitous nature of media is therefore creating a powerful public pedagogy (Giroux, 1996). The logic behind the idea of media and technological literacy is that if students learn more about their own “media diet,” and how technologies influence their actions and environment, they will not be passive consumers or addicts, but will instead move towards being producers of their culture, learning to limit their time and use of technology to healthy levels (Center for Media Literacy, 2011; Wesch, 2009; Ontario Ministry of Education, 2011). Students can also learn to be ‘stewards of their environment’ through online resources and connections with virtual communities with shared environmental ideals, thereby creating a social and political identity in tandem with those communities. Educators have the potential to direct learning through different media and use technologies as tools for critical thinking. My study, referenced in this thesis, observes these activities and the learning that transpires, as well as the narratives that the students create.

Mass media can expose youth to models of behavior and lifestyles that provide social identification and have the power to build positive personal and social skills (Huston & Wright 1998; McHale et al., 2009). The Ontario Ministry of Education (2011) Curriculum Guide, Environmental Education: Scope and Sequence of Expectations, aims to expose students to Media Studies that will help them to becomes environmentally aware and “responsible citizens” (p. 2). However, the onus lies on individual educators, not government agencies, to do this work. There needs to be much more emphasis on the potential use of technology combined with art for Environmental Education among educators and students than is currently the case.

**ii. Shifting to New Narratives in an Ecological Age**

Currently, the dominant anthropocentric meta-narrative of progress through technology and consumerism (in service to the paradigm of endless economic growth, which is for some arguably destroying the conditions that make life possible on Earth) is widely communicated
through the electronic and print mass media and, in turn, is shaping our society and how students think and learn. This technocratic consumerist meta-narrative does not sufficiently take into account the wellbeing of local communities, individual lives, or the natural environments where students live, or the biotic life systems that make human life possible (Gruenewald & Smith, 2008; Sobel, 2005). The narratives that inform our society, although very complex, can nonetheless be expressed in binary terms for heuristic purposes: the choice to live in accordance with a narrative based on endless economic growth or a narrative based on sustainability. The latter worldview entails an understanding of the universe as a “communion of subjects” and not as a “collection of objects” (Berry, 1988); it also reflects a transformative or mutually beneficial relationship (Miller, 2008). The one-way transmission of consumerist norms and values, on the other hand, represents a transmission from corporate powers to passive citizens, whose sole agency is reduced to the role of what brand to buy. A transitional period from one meta-narrative to the other is required; this period is what Berry calls “the Ecological Age.” This is a time when we can adopt new stories and narratives for how we are to live and negotiate life on a changing and increasingly challenging planet, where floods, hurricanes, droughts, pandemic diseases, famine, and conflicts over water will become increasingly the norm. Berry advances a communitarian, inclusive, non-violent, and pluralist society over an individualist, exclusivist, and violent paradigm for this changing world. Richard Heinberg (2007) describes the several different approaches to climate change and peak oil, including “lifeboats” and the “last man standing” option, where lifeboats correspond to Berry’s inclusive social imperative and the last man standing option corresponds to a socially alienating survivalist mentality.

The world that children inherit, due to climate change, may be a very difficult place, so it is imperative that the educational system begins to foster a sense of moral and social responsibility towards the Earth, but also compassion. The danger, in an individualist consumerist society that glorifies violent solutions to social and political problems, is for students to adopt those violent norms and values, when resources become increasingly scarce due to climate change. Educators
thus have a social responsibility to promote non-violent solutions, starting with an ethic of non-violence towards the environment and animals. Education is identified as one of the pillars of this transition. As this thesis hopes to demonstrate, this new narrative needs to involve not only direct experiences with nature, to the extent that that is possible for urban students, but also the symbolic experiences we represent and reflect upon through the use of art, media and technologies.

The historically new narrative of globalization and industrial development and cultural homogeneity challenges ancient ecological identities, which Berry (1988, 2000) points out have been a part of the human story for as long as our species has inhabited this planet. Rather than a society enchanted by and addicted to speed, accumulation and power, which has disconnected us from the places where we live, environmental inquiry and awareness can guide us toward new stories and new identities. Central to this thesis is the understanding that children, up until middle childhood, still consider themselves to be a part of the natural community. They also continue to think of nonhuman animals as their friends (Waldau & Patton, 2006). Nurturing this connection early on by allowing children time to play, create, and imagine their place in the web of life is possible through an integrated Environmental Education. Older students who do not feel connected to nature are also very susceptible to the outside world and influences. Local and global environmental problems are often ignored in favour of the pursuit of ‘the good life’ (e.g., consumerism, the American Dream), which education enables by giving the student the training to join a global marketplace and to become defined as a consumer. Although this educational paradigm serves the economic self-interest of the individual, it is ultimately destructive for communities and the natural world, and may also be thought of as harmful to the individual, as the emerging field of eco-psychology documents. To create social and environmental responsibility, learning needs to be situated in a more profound experience of place, community, and nature, and it also needs to acknowledge where students’ real learning exists (Wesch, 2008). Cultural

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28 This is a reference to Mortari’s (1997) study and my own investigations (2012) with children in second, sixth and twelfth grades in Toronto, Ontario.
anthropologist Michael Wesch (2008) argues that ‘real learning’ must consider the technologies and media world we inhabit, just as much as the physical world. Richard Louv (2012), although a strong proponent of time in nature, seconds this notion and proposes we transition to ‘hybrid thinking.’

Electronic communication programs (e.g., such as Google.com, Adobe Reader, and social networking media, such as texting, blogs, Twitter, YouTube, and Facebook) provide accessible information and can, potentially, help to create meaningful and significant connections among students (Wesch, 2008). Wesch (2008) defines meaningful social connections in two interconnected ways: (1) the “semantic” ability to connect ideas and concepts, and (2) the “personal” association of “meaning and significance” in relation to identity, which also refers to how people “relate, connect and contrast with other people” (Wesch, 2008). Social networking media can accomplish both things. Environmental Education can provide these connections as well.

Outside of the classroom, some students are already discovering methods for communicating the important things in their immediate lives and resisting the larger dictates of corporate media messaging. The arts and the stories we tell are requisite for challenging outmoded cultural and social norms and fostering social and political transformation. Technologies, coupled with media culture, provide additional resources and images that students can use or reject in forming their own identities. Identity shaping and re-shaping occurs online, as young people adopt not only one but many identities, creating and re-creating themselves in relation to culture. Youth are not only affected by the commercial mass media and its messages; they are also very engaged in social media that they can manipulate and create. User-generated media changes relationships within an integrated mediascape, where students are at the center of their own creations (Wesch, 2009). This has potential for Environmental Education, just as it does for the formation of identities as consumers, for which reason many corporations have invested heavily in influencing digital social media. The use of digital media for Environmental Education is, of course, more ethically
valuable than creating a consumerist identity online because it is, by definition, socially and morally responsible, and consumerism is not.

The phenomenon of user-generated media, and its distribution as an alternative to the mass media, has affected our interpersonal relationships in ways no one could have predicted (Wesch, 2009), challenging accepted notions of community and place. The ‘remixing’ culture of YouTube, where videos are changed into response videos, for example, links people to one another and new ideas in non-linear and creative ways. To some extent this weaving of co-creations among people can be (or could be) instrumental in networking and connectivity to promote environmental learning.

Creating and sharing across vast geographic spaces has the potential to increase sensitivity and a love for the Earth and nonhuman animals. Facebook, for example, is already heavily used by animal rights groups to share ideas and events and petition, and there are many Facebook groups that exist for the purpose of promoting environmental awareness and action on climate change issues, biodiversity conservation, energy issues. Students often make animation and short films about their pets, or places where they live, and post them to YouTube, or create a Facebook page to promote the places where they live and what they care about. They can compile images and videos online and array them in new formations on YouTube, or post them to Facebook, and can also just videotape themselves delivering commentaries. The students in the twelfth grade classroom I observed posted some of their photos and stories online to share with one another and the wider online community. In this way they were engaging in a meaningful communication about their place in the world and their lives. ‘Critical media pedagogy’ can enable students to understand their culture and society and participate in the creation of place (Wesch, 2009). It can help them avoid media manipulation by providing forums for resistance and awareness of corporate media manipulation, as well as providing access to alternative forms of culture and social transformation excluded from mainstream media (Center for Media Literacy, 2011). Many people who are socially and environmentally aware and progressive get most of their news and information on issues
important to them from social media networking sites such as Facebook, or via email, or websites, and not from the mainstream media sources (e.g., newspapers, radio, television).

There are benefits and potential uses of new media and virtual technologies for advancing Environmental Education, and given that these technologies have been widely adopted by most the world’s young people on their own, I suggest that they be explored critically and carefully in the classroom. While I inquire into the possible role of media and technologies for engaging student imagination and creativity for the purposes of Environmental Education, I do not address the complex and diverse body of scholarship related to new media theory and studies. Youth represent the greatest demographic of user-generated alternative media (Wesch, 2009), and they are producers to the extent that they internalize and then reproduce its memes – a process that sociologist Peter Berger (1967) identifies as reification of social norms through internalization, objectification, and externalization, and what philosopher Charles Taylor (2004) identifies as the reproduction of “social imaginaries” that influence and inform society on a fundamental level. A social imaginary, for the purposes here, may be thought of as the same thing as Berry’s concept of “story” – the meta-narrative that gives a society is worldview, its sense of purpose, and what unites that society in common purpose. User-generated alternative media are vehicles for the transmission of social imaginaries and norms and values. They have the creative potential to advance ecological learning, creating interpersonal and meaningful narratives that advance a biocentric and/or a cosmo-centric perspective.

Media and technological literacy can be valuable instruments in challenging consumer culture (Silver & Thoman, 1990). Just as technological and media literacy can enable students to make wise choices, to create and use technology and media in their own constructions, it has the potential to foster and inspire ecological concerns and lead to new narratives for sustainability. Media and technological literacy has aided in different conceptions of literacy and competency that is proving useful for citizenship and the future (Meyrowitz, 1985). Wesch (2009) maintains that every six months there are new social networking technologies that are introduced to students,
which they can either accept or reject based on their own criteria. Students and educators alike are learning to be literate in this new mediascape, which means being critical as well.

The challenge of ecological literacy is recognizing and nurturing real relationships over technologically mitigated ones. Art presents the possibility of cultivating an attitude, a reverence, and a personal dialogue with the natural communities in which we live (Graham, 2008). Can new technological literacies guide us into this ‘co-creative’ dialogue with nature and art? I believe they can, and that there is evidence for them doing this already, but it is a process that must be negotiated with caution, due to the dangers of Internet addiction and loss of real engagement with nature or embodied activism, caused by prolonged sedentary activity. Embodied engagement with nature and environmental activism cannot be replaced, only supplemented and supported by electronic media.

iii. Principles of a New Literacy of Technology

A healthy relationship with technologies relies on a healthy relationship with one’s environment. In an attempt to articulate the skills and dispositions that are needed in our relationships with technologies, The Alliance for Childhood (2004), in their work *Tech Tonic*, suggest ten principles for a new technological literacy for the 21st century:

1. Slow down: honor the developmental needs of children.
2. With adolescents, teach technology as social ethics in action, with technical skills in a supporting role.
3. Relationships with the real world come first.
4. Technology is not destiny; its design and use flow from human choices.
5. Choice implies limits – and the option to say ‘no.’
6. Those affected by technological choices deserve a voice in making them.
7. Use tools and technologies with mindfulness.
8. To teach technology literacy, become technologically literate.
9. Honor the precautionary principle: When uncertain, err on the side of caution.
Ask tough questions about long-term consequences.

Make time, space, and silence for reflection.

Responsibility grows from humility.

Be resourceful with the tools you already have.

10. Respect the sacredness of life in all of its diversity. (p. 55)

These ten principles demonstrate that contact with technologies rely on dispositions that students must establish before using these tools. This entails emphasizing a healthy relationship with the Earth, embodied engagement with the environment in some way (either through creating art, or a walk out of doors, as long as the senses are ignited) and with communities dedicated to that idea, as well as helping students develop “habits of mind heart and action that can, over time, mature into adult capacities for moral reflection, ethical restraint and compassionate service” (Alliance for Childhood, 2004, p. 8). The first principle also suggests young children should not use advanced technologies. These principles are valuable as a guide in the formation of an ecological identity, and the “skills and dispositions” students need to bring to their encounters with technology (Alliance for Childhood, 2004, p. 55).

Youth in particular desire agency and purpose (Gruenewald & Smith, 2008). They can make a difference in their communities when given the chance to reflect (Barstch, 2008). Reflection and reasoning are a critical tools that all students need later on in life to be healthy and productive members of society. Educational researcher James Catterall (2008) found that the arts help in the development of the pre-frontal cortex (the reasoning part of the brain), whereas technologies and passive viewing of media hindered its growth and development. Reasoning comes from a part of the brain that is not fully developed until humans reach their mid-twenties (Catterall, 2008), demonstrating that technologies, when used, need to be used thoughtfully. It also means critical thinking in relationship to the technologies and recognizing that not all technologies are equal. Electronic media can be useful to aid reflection.

**ii. Prescriptive vs. Holistic Technologies**
Technologies have a physical effect on the brain (Dakin, 2014, Catterall, 2008) but as Ursula Franklin (1999) demonstrates in her work, *The Real World of Technology*, technologies are socially and politically motivated. They are not neutral, and not all created for the same purpose, and as such can be placed into categories she identifies as holistic or prescriptive. The latter, prescriptive technologies, are centralized and unsustainable and prescribe the way in which they are used. Examples are cars, television, nuclear power plants, mega-dams, and advanced weapon systems. Holistic technologies, in contrast, Franklin associates with creative work, where the user is in control of the process -- such as creative computer programs or cameras. I would add that the holistic-prescriptive distinction may be thought of as a spectrum, rather than as two actual and distinct categories – meaning that computers, for example, are in the middle of the spectrum, because they are very prescriptive in their design but can be holistic in their application.

Importantly, holistic technology, according to Franklin, is relatively sustainable, and its damaging effects can be reversed. Prescriptive technologies, however, tend to be unsustainable, and the effects are not reversible (think of fossil fuel or nuclear technologies, for example).

Relating Franklin’s theory to Environmental Education, holistic technologies are predicated on listening and reciprocity, whereas the prescriptive model is predicated on transmission of knowledge and limited interaction through feedback. Prescriptive design is not interactive or conversational: it is more restrictive, a kind of ‘un-listening’ or ‘non-listening.’ Listening can manifest itself through the process of building a context and communication with another, or what Franklin calls ‘reciprocity.’ Reciprocity is both situational and adaptive. In order to use technologies and media in new ways, reciprocity needs to be present. The initial assumptions of the listening party can be altered by the encounter, because they are not prescribed beforehand by an interaction with a system, machine or bureaucracy. Environmental Education, I would add, must be reciprocal and interactive to be effective. If it is merely transmitted (is not reciprocal), it is not effectively learned, because real learning requires transactional communication. In this way, education and technological design may be thought of as related.
Distinguishing between holistic and prescriptive technologies is necessary for directing environmental learning. Since we are not able to fully dispense with technologies in this society, we must choose technologies that are (relatively) more holistic and less prescriptive. Holistic technologies are consistent with transformative learning because they are tied to community, creativity and meaningful experiences. Technologies that are holistic, then, engage students in creative explorations that can generate a kind of listening. Responsibility toward future generations is an important part of learning how to live. Respecting technologies as a ‘double edged sword’ is something ancient societies have long understood; nature is everything and our own creativity and creations fit into its designs. Nature is the ultimate bookkeeper and, as our culture today continues using technologies, we can teach our children how to honor this relationship and become a part of it, or continue as our modern society does, as if we were outside of it. This kind of critical thinking is not anti-technology, but it is notably pro-nature; it treats technology with “respect and restraint” (Alliance for Childhood, 2004, p. 9). Technologies can be both powerful and meaningful, but they should fit into the context of our lives and into nature, and not define our lives and who we are.

Berry (1988) suggests people long ago had an intimacy with the Earth that we have lost. However, as we move away from the information age and a love affair with technologies, and at the same time learn to appreciate the natural world due to our new-found knowledge from the physical sciences, we are entering a new engagement in the Earth’s story. The ideal of a sustainable society Berry called the Ecozoic Era. In that ideal society of the future, human beings will use sustainable practices, be respectful towards biotic systems and other animals, and they will use only holistic technologies. Part of this new engagement requires developing technologies that are ‘mutually enhancing’ (Berry, 1988) with nature’s systems. For instance, our manufactured technologies should be “integral with Earth technologies” (Berry, p. 65), which means they should foster nature’s natural systems for life and abundance but not diminish them. Recognizing that nature is violent as well as benevolent, and that technologies have a defensive role to play, Berry cautions that technologies are necessary because we have invited destruction and imbalance in the
natural systems. We can begin to shift the focus toward the healing of the Earth, and enter a
‘mutually enhancing relationship’ when we change the direction of our energies. We cannot
‘manage the Earth’ but we can creatively recognize our destiny is tied to the Earth. This thesis
establishes how our technologies and media can guide us toward a re-imagining of our relationship
with the Earth and help students meet the ecological challenge of their time.

V. Shift in Experiences and Relationships

i. Taking Time for Childhood

Children are engaged in media and technologies more than almost any other activity, and
yet the use of most of these technologies, such as watching television, and playing computer
games, lies at the prescriptive end of the spectrum. The shift in the conditions that define our
relationships to nature and animals has a profound effect on children and young adults. In our rush
to acquire and use more technologies, regardless of what kind, fundamental aspects of the human
experience, such as time outside and creative exploration of place, are being lost. David Orr (2003)
explores what he sees as the collateral damage to children who are immersed in a political
economy driven by media and technologies. To begin with, natural spaces are being destroyed and
replaced by malls and urbanized settings. To keep apace with growth, lives are sped up
considerably through technologies that are beyond the human scale in terms of the speed and size.
Educators note that while society speeds up, a child’s neurobiological development does not. In
fact, new imaging demonstrates that the human brain and its systems “mature slowly” and “healthy
neural branching of developing brains depends on close relationships” to others, including other
species, and “hands–on experiences in the real world” (Alliance for Childhood, 2004, p. 23).
Psychologist William Craine (2003) notes that cognitive development “has a certain slowness” and
“like plants, grow according to nature’s timetable” (p. 150). Children need time to develop
naturally.

It should come as no surprise, then, that there is a growing body of research that suggests
elementary age students are unprepared psychologically, emotionally and cognitively to use
technologies (Alliance for Childhood, 2004). According to The American Academy of Pediatrics (2004) and a study conducted by the Henry J. Kaiser Family Foundation (2003), the more children engage in electronics the higher the likelihood they may experience depression, anxiety, and stress. Extensive studies show that being a passive observer of media and using technologies indiscriminately can be unhealthy in a multitude of ways, causing obesity, addictive behavior and lack of motivation (Alliance for Childhood, 2004; Dakin, 2014). Engaging with technologies and media before the age of critical thinking has been linked to a host of developmental and health problems. Young children who watch television and use iPads and cellphones before they learn to read are being harmed by those activities. Young people are becoming more sedentary, immersed in screens, barraged by media messages that are unhealthy for their physical bodies, their social development, and their overall identity development, (Alliance for Childhood, 2004, pp. 21-24).

Children may not be able to critically process the content and context of the messages in media and ideologies surrounding technologies. They lack discernment, and easily internalize the norms and values absorbed by the new media. Even with parental controls on computers and supervised television watching, young people will inevitably be bombarded with advertisements promoting unnecessary consumerism (purposely creating the desire to buy certain items), pseudo-pornographic imagery, and violent imagery, because these images are so ubiquitous online and on television. In fact, most children before the age of critical thinking cannot distinguish between advertisements and other programming, which makes them highly susceptible to corporate sales pitches. Screen time is replacing real world experiences in nature and in the communities where students live, and yet the behavior of providing technology from parents and schools and the use of it goes unabated. Never before have children been bombarded with so much television and Internet information, and the consequences for this emerging generation are not yet known, but some of the findings cause concern for parents and educators.

In 2000, a report from The Alliance for Childhood, *Fool’s Gold: A Critical Look at Computers in Childhood*, proposed a moratorium on more computers in the elementary education
Educators, health professionals, technology experts, and advocates for children all found that there were few gains from media bombardment, and a lot that was being lost, such as creativity, play and hands-on learning. The report suggests de-emphasizing technology in the elementary school classroom and giving children more time to develop their identities.

Children are being forced to grow up quickly, sit for long hours in classrooms, without physical exercise, and maintain a host of sedentary extracurricular activities, all at the expense of their time to develop naturally through unstructured play and creativity. Extensive research across different fields has demonstrated time and again that “children need face to face and hands on relationships with the living world for healthy intellectual, emotional and physical development” (Alliance for Childhood, 2004, p. 21). Time outside in unstructured play has been shown to decrease stress and increase wellness (Suzuki, 1997; Louv, 2008). As children develop it is important that they engage with the world and develop a healthy sense self and place in the nature of things.

In my own recent experience, and having participated with my children in David Suzuki’s “Green Challenge”29 which requires at least thirty minutes outside every day in unstructured activities, I found that, after thirty days, we all looked forward to and enjoyed our time outside and we became more aware of the life in our own backyard. We found a bird’s nest and a family of raccoons living around the tree; our rhythms came to match the rhythms of the world outside. Our half hour time outside gradually lengthened and we now spend at least an hour a day outside walking, observing, listening and being present. Sometimes we write poems together like this one:

I wake to the sound of a bird calling my name
Pulling covers, I rise to play the game
The little chickadee ruffles her feather to say
Follow me Anna, let’s go play
I pet my cat who stretches out long

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29 See http://30x30.davidsuzuki.org/ for more information on David Suzuki’s Green Challenge.
And kiss my dog who barks a song
Then dress real quick to go outside
To find the bird who likes to hide.

Children are excited to write and read into the natural world, when adults do it with them. People of all ages need time out of doors to come to understand their feelings, their ideas, and their relationship to their local environment, before engaging in a technological world outside of their immediate understanding.

Children need time to develop away from technologies and screens, cultivating awareness, patience, and interest in the natural world and their own communities. However, most children are immersed in a high tech world before they learn to develop critical thinking tools. Anticipating the modern onslaught of media on children, pioneering media scholar Marshall McLuhan (1994) noted the impact of media on our lives, and how children in particular needed time, experiences and space to develop an identity away from the “products of technologies in order to grow into sophisticated readers of technology” (as cited in Alliance for Childhood, 2004, p. 78). David Orr (2003) suggests that “without anyone intending to do so, we have unwittingly begun to undermine the prospects of our children, and, at some level, I believe that they know it” (p. 280).

ii. Age appropriateness

While young children may not understand the boundaries and the critical thinking that are required to engage in technologies, the Alliance for Childhood (2004) suggests that introducing media and technologies during middle-school is the appropriate time in a child’s development. It is at this time they can grasp the complex world of technologies and how to research and navigating online resources without being susceptible to the pitfalls. Middle school age students can begin to critically access the mixed messages in media and the variety of creative uses available with new and old technologies. It is only at the end of middle childhood (ages eleven and twelve) that children can begin to understand the moral, social and ethical considerations of using technologies and the importance of their role in the world. High school students are usually able to navigate and
investigate media and technologies as creative tools as they have already developed an ethical compass for doing so. Without the critical tools to reflect on what they are doing and learning, children are becoming technologically illiterate in a high-tech world – where ‘technological illiteracy’ is defined as the inability to critically evaluate the media one is absorbing. Environmental educators argue for a growing technological literacy that takes into account responsibility toward the Earth.

iii. Spirituality, Awe and Wonder

The dominant role science and technology has played since the Industrial Revolution has usurped other ways of knowing and feeling. As Wendell Berry (2000) notes: “a legitimate faith in scientific methodology seems to veer off into a kind of religious faith in the power of science to know all things and solve all problems (p. 18). This kind of “modern superstition” (Berry, 2000, p. 18) – also called faith in progress through technology – is becoming the norm in our secular society, and rarely questioned, although children grow up “spiritually impoverished” (Orr, 2003, p. 290). This culture, and the type of education that it fosters, present the hard facts of science of technology without the awe and mystery of the numinous in the natural world. According to Marc Bekoff (2006) it also lacks compassion, for which reason he advocates what he calls ‘compassionate science.’ David Orr (2003) believes that since we have suppressed our relationship to nature and all that it has to offer, our imaginations are impoverished ecologically and spiritually. And yet, “humans cannot live without meaning, their search for meaning, bereft of the possibility for authentic expression, can take ever more bizarre and futile forms” (p. 290). Orr (2003) outlines how technologies and media have shifted our relationship to nature in the following ways:

- Direct contact with nature to an increasingly abstract and symbolic nature
- Routine and daily contact with animals to contact with things
- Immersion in community to isolated individualism
- Less violence to more violence, much of it vicarious
- Direct exposure to reality to abstraction and virtual reality, and
A relatively slow pace to a fast pace. (p. 291)

A new approach to technology, grounded in an ecological ethic and environmental framework, can and should shift this trajectory and provide new meaning for student learning. A new technological literacy can and should emerge, as a result: one that has a sense of responsibility and also a sense of play, both of which are needed to be mindful and creative, ethical and flexible in our thinking.

Richard Louv (2010) calls this marriage of our past identities and practices with the present, which has the potential to transcend the limitations of the past, a “hybrid” mind (p. 10).

VI. Integration for Transformative Learning

i. Hybrid Thinking

Technologies and media are part of our current landscape, but they are rooted in nature as well. In the past, aboriginal elders taught the young the “wisdom” of balancing ancient and traditional technologies, whether it be it farming, or making clothing and pottery, with “gratitude, humility, generosity, and reciprocity towards the rest of the natural world” (Alliance for Childhood, 2004, p. 9). These teachings taught balance above all. Nature is giving, and the context for our whole lives, but is also deserves loving kindness. All things in life – including our technologies – are “woven” into this “sacred web of life” (Alliance for Childhood, 2004, p.9). This knowledge and approach can be very practical for educators and students today who are struggling to articulate how and find a way to introduce this idea into our cultural ideologies. Being aware of and having respect for the natural world, but also being capable of using technological tools practically and ethically, can engender what Richard Louv (2012) calls “hybrid thinking” (p.10). This kind of thinking is not restricted to non-use of prescriptive technologies, but instead seeks to use them creatively as tools for ecological freedom and responsibility, to the extent that that is possible (keeping in mind that some prescriptive technologies cannot ever be used in this way and simply need to be abolished). Gumbretch (2004) notes that our use of technologies will draw us back to
the real world, to presence, and re-ignite our affection and desire for the real embodied Earth. He notes:

Contemporary communication technologies have doubtlessly come close to fulfilling the dream of omnipresence, which is the dream of making lived experience independent of the locations that our bodies occupy in space... the more we approach the fulfillment of our dreams of omnipresence and the more definite the subsequent loss of our bodies and of the spatial dimension in our existence seems to be, the greater the possibility becomes of reigniting the desire that attracts us to the things of the world. (p. 139)

It is with this hope for transformative learning that I approach using technologies and media in environmental learning.

ii. Educators as Co-Learners

Reading the world means being multi-literate across virtual and embodied realms (Gruenewald & Smith, 2008), but it also means listening to one another. The challenge facing educators is to help facilitate ecological literacy through the use of technologies and media, which students are already using to entertain and socialize, and to guide them in their engagement with the natural world. Students may be familiar with new and virtual technologies, but rarely use them for critical thinking and learning (Wesch, 2009). Furthermore, students are often more proficient in the use of media and technologies, which suggests that educators can shift from transmission modes of learning to more transformative ways of learning and knowing (Miller, 2008), an approach more consistent with holistic education. Educators and students can become co-learners in this process of experimentation and imagining, utilizing new digital media in the process. The challenge is to “create platforms for participation that allow students to realize and leverage the emerging media environment” (Wesch, 2008), wherein students can actively engage new media and technological tools, empower themselves as critical users, and understand the role of media influence in the formation of their social identities.
The ten principles set forth for a new technological literacy in *Tech Tonic* (Alliance for Childhood, 2004) could help guide student reflection and awareness. Another requirement could be that educators themselves become technologically literate. Recognizing that educators and students are native to the new mediascape (Wesch, 2009) provides a rich opportunity for co-learning and for exploring together the link between media/technology and Environmental Education.

Using the arts and technologies to engage in a “co-creative” dialogue between nature and culture can potentially become a part of a larger dialogue about our place in the nature of things. A photograph or a video, for instance, can help direct our attention to detail on a flower, or be used to represent an artistic vision of the sky on a cloudy day. I took this photograph in May, 2012 in Toronto:

![Urban Flower, R.York, Toronto, ON](image)

As the Buddha states: “If we could see the miracle of a single flower clearly, our life would change” (as cited in Tenzin-Dolma, 2008, p. 59). There is no way to replace the direct experiences and numinous experiences nature has to offer. However, symbolic experiences with nature can be
moving, and when students create their own images of nature and works of art, be it a poem or a video about their environments, they are also creating a culture and an ‘aesthetic of sustainability’ (Kagan, 2011).

Technologies can enhance nature exploration is a myriad of ways, as noted by Patricia Holloway & Carol Mahan (2012) in a recent study aimed at generating student-made nature videos. Nature is the out-of-doors, and involves an engagement of the senses; it moves beyond the classified knowledge of science and curriculum mandates. It can be an emotional experience, offering a “wilder pedagogy of Earthworms and sky” (McKenzie et al., 2009, p. 5). Students in the sixth grade class I observed in connection with this study also made videos in the out of doors, and related that they felt engaged and excited about their experience in part because it was about and in a real place. Reflecting, re-shaping and re-imagining our relationship to one another and our sense of place are all parts of transformative Environmental Education, and electronic media can help facilitate that process.

VII. Summary

We are not doing away with our technologies anytime soon, and while they already play an important part of the curriculum and students’ lived experiences, we need to examine their possibilities for Environmental Education. This chapter offers a critical examination of the role and use of technologies and media in education and culture. As we redefine our culture, and learn through Environmental Education to be part of the whole (nature/universe), and not outside of it, students need to be encouraged to begin a “conscientious listening” (Rawlings, as cited in Gallagher, 2008, p. 76) to their own intuition and to listen less to the technologies that currently dominate their lives. This conscientious listening comes when students see Bateson’s “patterns that connect” (as cited in Orr, 1994, p. xi). Technology should fit into ecological learning, usurping it when needed, or at least dominating it.
The chapter has addressed new literacies for learning in the 21st century, and how our relationships can be defined and shaped in accordance with these literacies. There is a recognition that the use of technology needs to be limited during childhood. The integration of technology and art for environmental learning can become a process whereby educators and students learn together.

Figure 16: Reflections, (TDSB student, 6th grade)
CHAPTER VI: EDUCATIONAL PARADIGMS

We do not receive wisdom, we must discover it for ourselves. (Proust, 1871-1922)

I. Changes and Challenges: Learning for the Earth

i. Introduction

In order to challenge existing worldviews, and guide students toward a re-imagined relationship with the Earth, educators have the challenge of navigating our technologies and media for enhanced learning, and engaging students in direct and symbolic experiences with nature. How to approach this daunting task – and an integrated, inquiring, holistic, place-based, and compassionate pedagogy is the focus of this next chapter.

ii. From Science to Art: the Evolution of Environmental Education

For the purposes of this thesis, “mindfulness, awareness and curiosity, and reflection about our natural environment are the heart of environmental education” (Miller, 2008). Environmental Education can also be defined as a study of the relationship between people and the environment, as well as understanding and learning more about our interdependence and the influence we bring to bear upon it (Palmer, 1998). It aims to “provide every person with the opportunity to acquire the knowledge, values, attitudes, commitment and skills needed to protect and improve the environment, and to create new patterns of behavior in individuals, groups, and society as a whole toward the environment” (The Tbilisi Declaration as cited in Palmer, 1998, p. 136). Environmental Education is also recognized as a means for improving environmental behavior (Disinger, 2005, Zelezny, 2005), and some believe this should be its primary goal (Leeming, Dwyer, Porter, & Coburn, 1993, as cited in Zelezny, 2005). Others believe that Environmental Education is a means for establishing a more reflective and connected relationship with the natural world (Berry, 1988, Orr, 2004) suggesting that the means are as important as the end results.

Notably, Environmental Education is a complex and ever evolving field of study and, as Orr (2004) argues, it cannot be understood through a single discipline, or department; instead, it
needs to be viewed holistically and taught across the curriculum. Yet, despite two decades of
discussion and experimentation, an integrated and Earth-centered curriculum is not occurring (Orr,
2004; Palmer, 1998; O’Sullivan, 1999). Environmental Education is still very much relegated to
science and science education both in terms of scholarship and educational models.

Environmental Education varies widely and is an elusive part of the curricula for a number
of reasons. Educators outside of the science disciplines are often unsure of the goals and
philosophies of Environmental Education. They associate it with scientific research, and are
hesitant as to how to implement into the existing curricula (Hungerford & Volk, 2005). The
traditional idea is that if you educate teachers about something (in this case the environment), they
will adjust their teaching to adapt; yet, this has never been successful (Hugerford & Volk). Only in
the last decade have successful Environmental Education models that involve student engagement
for the environment begun to take shape in the United States, in the United Kingdom, and in other
countries (Palmer, 1998). These educational models “enact forms of education for the
environment” as opposed to being solely “about and in the environment” which has been the
They rest on a framework that involves students, both emotionally and personally, with their
environments.

Environmental Education affects us all. Humans and non-humans alike are all residents of
the Earth; we are all affected by the state of environment. My inquiry into Environmental
Education extends to include compassion and sensitivity and is reflective of a curricula and
pedagogy that honors all species of the Earth community. Environmental inquiry encourages
students to adopt an ecological identity, and also environmental sensitivity. Environmental
Education, then, is not merely a subject, but a whole overarching context for how we see and act in
the world.

For the last two decades educators and scholars have begun engaging children in art to
foster a love for the planet and help them identify with their environments (Gablik, 1991; Song,
An appreciation of beauty is an important part of forging an emotional bond (Song, 2008) and the arts are an easy way for educators to instill this kind of care. Suzy Gablik (1991) suggests that the integration of arts for the environment is a way forward toward a “planetary self” and has the power of “connectedness and establishes bonds” for a lasting relationship with the Earth (p. 114). Her vision, which is reflected in practices such as eco-art, recognizes that environmentally focused creativity and art can help students develop a ‘planetary self’ through which they can transform their relationship with the Earth. Like Berry (1988), who states “the universe is not a collection of objects, but a communion of subjects” (as cited in Scharper, 2001, p. 111), Gablik sees this development of as an ecological self as a shift from ‘objects to relationships’ (p.7). Art is an ongoing act of presence, process and experience (Dewey, 1934/2005). The integration of art and technology for environmental learning necessitates a shift in our collective thinking. Gablik notes that in the past art was:

...a mirror (reflecting the times); we have had art as a hammer (social protest); we have had art as furniture (something to hang on the walls); and we have had art as a search for the self. There is another kind of art... that calls us into relationship. (p. 114)

Writing, drama, painting, filmmaking, singing and other artistic expressions, can call us into a relationship with the natural world. As an example, I explore the practice of nature writing in the next chapter. However, I will endeavor here to define the different overarching pedagogical models that are consistent with an arts-based Environmental Education and support Earth-centered worldviews.

II. Pedagogical Models for Earth-Centered Learning

i. Environmental Inquiry

Environmental Inquiry is “an overarching approach to Environmental Education” that embraces a “culture of collaborative learning” (Chiarotto, 2011, p. 6-7). Founded on the idea that children have a natural curiosity about the world, environmental inquiry asks students to
investigate their own ideas and learn by engagement outside, in nature, in reflection, and with others. The process of student learning by questioning and by doing is “more important than covering curriculum” (Chiarotto, p.11). This reasoning is consistent with a biocentric and a cosmocentric worldview and the ‘aesthetic of sustainability’ (Kagan, 2011), which is not hierarchical, but creative, curious, and evolving. For this reason, I suggest the experience of art as environmental inquiry can provide a basis for transformative Environmental Education.

Environmental inquiry is a four-branch approach to learning:

Branch 1 - Inquiry based learning, which is necessary for Environmental Inquiry, is “not a methodology or a mindset” but a holistic dynamic approach to learning. Inquiry Based Learning is noted to have increased student learning, motivation, curiosity, critical thinking, and builds lifelong skills. Student questions and theories are central to their learning as they investigate, reflect and share along the way (Chiarotto, 2011, p. 9).

Branch 2 - Experiential Learning allows students to learn in and for their environment. Direct contact and a hands-on approach to learning, is a primary means of learning and being in the world. Dewey (1900/1963) relates that experience is important, but it needs to be coupled with reflection in order to transform that experience into something meaningful. This “conscious engagement with direct experience is precisely where experiential learning and inquiry-based learning converge” (Chiarotto, 2011, p. 35). A purposeful engagement and reflection allows students to make discoveries instead of learning by reading, hearing, or transmission methods (Miller, 2008). Going outside is an important part of connecting to the living world and experiencing this connection.

Branch 3 – Integrated Learning seeks to uncover the whole learning experience, and reflects a holistic vision of education (Miller, 2008, Chiarotto, 2011). Integrated learning blurs the distinctions between disciplines, as students are able to make connections between their subjects and their own lives (Chiarotto, 2011). Promoted to help the transfer of learning from one subject to another, integration in education brings student interests and learning into the foreground. If “all education is environmental education” as Orr (2004) proposes, then an integrated model for
learning allows students to see the connections. If Environmental Education is integrated into the arts curriculum, students can approach their understanding of the world in more complex ways (Chiarotto, 2011). The process of integration, as suggested by educators, can be multi-disciplinary (taking on many subjects), and/or by skills themselves, such as critical thinking and communication skills (Chiarotto, 2011, p. 45), among others. Integration can become a substantive strategy in curriculum for environmental education. In order to encourage teachers to attempt integration of Environmental Education into the curriculum, the Ontario Ministry of Education published the policy document, *Acting Today, Shaping Tomorrow* (2007). Linking learning in this manner is the starting point for caring and acting for the environment, and fostering a responsibility.

*Branch 4 –* Stewardship grows from having empathy for life, which is a main tenant of eco-literacy and an important part of humane education. In the environmental context, stewardship “refers to human actions that contribute to a sustainable future for humans, animals, plants species alike” and acts of stewardship grow from respect for the Earth (Chiarotto, 2011, p. 54). Studies show that positive environmental behavior can result from environmental inquiry, and when students feel they have control over their learning, they “spend time in natural settings” and their actions are “linked to their classroom learning” (Chiarotto, 2011, p.54). The sixth grade classroom studying biodiversity at Lake Ontario were able to engage in learning outside using art and media in the process. They reported that it was “definitely more interesting than doing it in class!” and many expressed a desire to “come back to the Lake more” in their free time. As the teachers’ resource handbook *Natural Curiosity* (Chiarotto, 2011) details, students who go outside often are more interested in the natural world and what goes on there. Students are becoming scientists, artists, historians, geographers and ethnographers of place.

**ii. Place-Based Education**

One objective of Environmental Education is to facilitate a process whereby students study their own places and become competent and engaged in their own natural environments and communities (Orr, 2004; Louv, 2008; Gruenewald & Smith, 2008; Sobel, 2005). The practice of
place-based learning is relatively new to the discussion of curriculum and pedagogy, but it is slowly being recognized as important for environmental learning. Studies show that human beings identify more with local issues and immediate communities than with global issues (Palmer, 1995; Gruenewald & Smith, 2008). The place-based education movement is grounded in a commitment to bringing young people and nature together in the hope that this connection will engender a citizenry that is caring, committed and ecologically responsible. Place-based learning uses experiential, integrated and inquiry-based learning to promote community engagement and stewardship of place.

Research demonstrates that there is a need to connect with our communities for our own wellbeing and that of the planet (Gruenewald & Smith, 2008; Louv, 2008; Orr, 2004). Youth are often more comfortable on screens and in shopping malls than being outside exploring the wildlife in an urban ravine. As a result they progressively distance themselves from the natural world and feel “look elsewhere for the good life depicted by media advertisers” (Gruenewald & Smith, 2008, p. 8). Place-based education counteracts this disconnect. It is an approach to learning that begins with questions such as “Where am I? What is the nature of this place? What sustains this community?” (Sobel, 2005, p. iii). When students ask these questions of themselves and their own communities, they are becoming invested in their own place. They can “re-story” (Sobel, 2005, p. iii) their previous ideas about place and nature, and position themselves as important characters in that story.

In order to re-examine and re-envision urban centers as natural spaces and places for learning and to see ourselves as part of a biotic community, we need to engage in a pedagogy that embraces nature in the city. Making use of local natural spaces to explore a connection to place can be inspired by walks outside, and from an artistic response to that experience. This is particularly important at a time when many young people feel separated from the communities and natural spaces where they live. In order to make learning relevant to the lives of their students, educators are considering ways to reconnect the process of education to the well-being of communities.
(Gruenewald & Smith, 2008) and their natural environments (Goleman, et al., 2012). The traditional classroom is often relegated indoors and essentially separated from the natural world by virtue of being in an urban environment.

As an educator, I see that my own students, from both high school and higher education, as well as my own children in their learning, move into virtual and consumer oriented worlds, and as a result are not only distanced from their own communities but in some ways disconnected from their own potential. Some children are not used to going outside and exploring freely, partly because of parental fears (Louv, 2008), but also because it is not a common part of the classroom ecology. Rarely do classrooms take a large part of their learning outside, for the same reasons (substitute parental risk aversion for institutional risk aversion) even though extensive empirical studies show that where we learn is just as important as how and what we learn (Orr, 2004; Gill, 2007; Hattie et al., 1997). Louv’s theory that time in nature enhances our emotional and physical well-being has engendered an social movement to take learning outside. Patricia Dakin’s (2014) article “Rewiring Our Kid’s Brains,” notes that a new study from Canadian researcher Marc Berman (2014) finds that time outside improves memory, cognition and overall productivity.

Place-based learning, like environmental inquiry, is a pedagogical model that insists on taking learning outside the classroom and into the community where students live. Studies show that schools that regularly take their curriculum outside found students were more interested and motivated to learn, more engaged with their surroundings, and able to communicated more effectively (Hattie et al., 1997; Neill, 2008; Loynes, 1998). A substantial report from 1998 using Environment as an Integrating Context for Learning (EIC) found that taking learning outside had positive effects on standardized test scores in all areas of learning (Lieberman, et al., 1998). Place-based learning programs not only require going outside; they require putting student interest and inquiry above the transmission approach of lectures and lessons. This is consistent with holistic learning that emphasizes not only a transaction approach to learning, where the student solves a problem or pursues a question, engaging in a co-creative dialogue with the educator, but also a
transformative approach to learning, where the curriculum “and the child are no longer seen as separate” (Miller, 2008, p. 11). At this level of authentic learning, students find meaningful connections. Studies show students are more engaged in learning when it has meaningful implications for their real lives, when they can share their learning with others (Bartsch, 2008).

In my experience, learning and engagement happen naturally when students can relate their own lived experiences and inquiry by engaging in artistic expression and play. For example, in one of my university English classrooms, students who participated in Earth Day activities aimed at creating awareness about e-waste caused by our discarded electronics were more interested in writing about the subject than those students who only heard about the events and activities. Later, as students became more aware of their own contributions to this environmental problem, with its far reaching effects on people in the developing world, they began to question their own discarded e-waste and to research recycling practices. Research demonstrates that students who develop an ethic of care in terms of nature and their communities do so from first-hand experience and from reflecting on those experiences (Mortari, 2004). Some of the students went on to use recycled e-waste parts to create works of art for the college community in order to generate more awareness.

When I taught at Los Angeles Community College in 1998, the world was just waking up to the plastic in the Pacific and the effects this was having on wildlife. In response, the students in my English class created a cap collection program to create giant sea life sculptures for public display on the beach. Students invested thousands of hours in planning, collecting and making the sculptures with over fifty thousand colorful plastic bottle caps. Their concern for the sea life not only led them to examine and transform their way of thinking and acting in the world, including plastic reduction and beach clean-up, but to become activists and stewards for the Earth. When given the opportunity to explore relevant and immediate environmental issues, students in my classrooms became increasingly curious and committed to learning. Moreover, they related that they felt more connected to the natural world around them after reflecting upon environmental issues in their local environments.
If students are going to be stewards of the Earth, and participate in their communities as vital active members, there is need for greater student interaction, imagination and engagement with their local surroundings and each other. This begins with inquiry, and a developed sensitivity toward the places where we live. The process of using the “local community and the environment as a starting point to teach concepts in language arts, mathematics, social studies” art and other subjects across the curriculum is the basis for place-based learning. It is a hands-on approach that is consistent with a holistic and integrative pedagogy and an “antidote to the no-thinking about the Earth common in many schools” (Sobel, 2005, p. 6). Place-based learning counters the negative effects of disconnect from nature and social fragmentation. People today are feeling the loss of community (Gruenewald & Smith, 2008; Wesch, 2009), which is one reason why students are seeking out online communities to fill the gap (Wesch, 2009).

Writing about place, as one kind of art experience, explores the possibility of engaging students in learning about their own communities, and a vision of building urban centers that will not only connect children and adults to nature, but will also allow them to become students of their own places, competent and engaged in their own communities (Orr, 2004; Louv, 2008). Students can use technologies and media to explore their natural surroundings and share their images and stories online for a greater audience. Studies show that human beings identify more with local issues and immediate communities than with global issues (Palmer, 2007; Gruenwald & Smith, 2008), and when there are opportunities to observe, reflect and consider one’s place, compassion and connection can emerge.

Affection for one’s home place is related to active stewardship of one’s community (Foundations of Place-based Learning, 1996), and engagement is critical to improving learning. An extensive review of research by the Coalition of Community Schools in 2003 found that “students learn best when they are actively involved in understanding and helping solve meaningful problems. This is true across all levels and grades” (McLaughlin & Blank, 2004, p.34, as cited in Bartsch, 2008, p. 78). Some believe place-based education is a vision of “health, bio-
diversity, humanity, and beauty” in response to “environmental decay;” it is a reclaiming of “the local in the global age” (Gruenewald & Smith, 2008, p. 7).

iii. Holistic Education

A holistic model for learning is also considered as a framework to support this thesis of integrating art, technology and media for Environmental Education. Ecologically we can see that all life on Earth is a part of a larger framework and nothing exists independently of this web of life. The holistic curriculum attempts to “bring education into alignment with the fundamental realities of nature” (Miller, 2008, p. 3). In essence, nature is interconnected and dynamic (Capra, 1982), and a holistic pedagogy recognizes this wholeness. The term holistic comes from the Greek word ‘holon’ which means integrated wholes (Miller, 2007). It refers then to the coherent whole that is made up of its constituent parts. Holistic education involves “exploring and making connections as it attempts to move from fragmentation to connectedness” (Miller, 2008, p. 13). In his definition of education, Ghandi (1980) wrote “the development of the mind . . . and the physical and spiritual facilities of the child . . . constitute an indivisible whole” (as cited in Miller, 2008, p. 3). This vision of connectedness can be found in eastern religions (Buddhism, Hinduism), in the philosophies of the ancient Greeks and Romans (Miller, 2008, p. 7), and in the worldviews of Indigenous peoples. It is a holistic philosophy that is deeply embedded in many cultures, but it is also an educational model that is useful for making connections. Holistic education relates to art for environmental learning and the integration of technologies and media because it involves:

… making connections. It attempts to move away from fragmentation to connectedness. It focuses on: the relationship between linear thinking and intuition, the relationship between mind and body, the relationship among various domains of knowledge, the relationship between the individual and community, the relationship to the Earth, and the relationship between the self and Self. (Miller, 2008, p. 8)

This pedagogical framework is important for examining art in relation to technology/media and Environmental Education. I consider how educators, students and communities can explore
relationships with others, the world, their communities and the Self, and express these relationships.

Holistic education is founded on the principles of balance, inclusion and connectedness (Miller, 2008), all of which are essential for ecological learning. Balance is an important concept for environmental learning; however, as noted earlier, our use of media and technologies are dominating our environments and creating an imbalance, which is unhealthy. Technologies are useful, but as they dominate our learning, culture and lives, other things are lost, such as time in nature, art, and creating space for community, family and friends. Kayaanisqatsi, which is the Indigenous Hopi word for “life out of balance,” is also the title of an interesting film that demonstrates how technologies and urban life have dominated our internal and external landscape. What we see and do becomes what we think and learn.

An ecological relationship begins at an emotional level and needs to be nurtured throughout a person’s life (McNamee, 1997; Mortari, 1997). Holistic educator John Miller (2008) argues that we need to educate the ‘whole child’ and bridge this dualism of feeling and thinking. Education needs to be an engagement of the “head, heart and hand.” A holistic pedagogy attempts to connect us to the whole, as opposed to the fragmentation we find in anthropocentric thinking, and technocratic societies. Holistic learning brings cohesiveness to learning. Holistic educator, John Miller (2008), in The Holistic Curriculum, proposes that a ‘perennial philosophy’ underlies the holistic curriculum. The perennial philosophy is founded on a number of principles, including the idea that “there is an interconnectedness of reality and a mysterious unity in the universe” and “there is an intimate connection between the individuals’ inner self or soul and this mysterious” (pp. 16-20). It is with this in mind that a holistic educational framework becomes an important context for this study. It fosters critical awareness, and can shed light on the relationships between different disciplines, such as arts, media and technologies, and foster inclusion. In addition, holistic education is seen to nurture the whole person and respect the relationships and life experiences of a person instead of focusing on skill development (Miller, 2008.)
Scholars and educators easily find connections between ecological worldviews and holistic learning (Berry, 1988; Capra, 1996; Miller, 2006, 2008). Some of the key pedagogical concepts of this pedagogy are interconnectedness, wholeness, balance, transformation, spirituality, and inclusion (Miller, 2008, 2010; Glazer, 1999). Interconnectedness is the process by which all things are inter-related and whole. This dynamic relationship is represented by unity, and seeing the relationship between the self and the rest of universe. It is a process of thinking that mirrors systems thinking (Capra, 1982) and an understanding that the Earth is one whole. The concept of the whole relates to the entire ecosystem and universe, and adopting this planetary consciousness (O’Sullivan, 1999) will enable us to move from a Technozoic Era to an Ecozoic Era (Swimme & Tucker, 2011; Berry, 2000). Furthermore, it will allow a synthesis in learning and education as a whole (Pearce, 1973).

Balance is another key feature of holistic pedagogy as it entails a “continuous tuning process,” between the whole person and the parts, in order to attain a “rightness” in their relationship (Miller, 2008, p. 9). In holistic education, it is not the equilibrium of mind and body that is important as much as it is a dynamic and continuous energy, where there is creative tension with the whole (Kyeong, 2013). Balancing becomes a process of creating, such as “individual and group” or ‘rational and intuitive’ or ‘Yin and Yang’ (Miller, 2008, pp. 7-9). A relationship of reciprocity is one of the hallmarks of holistic education. Philosopher Friedrich Froebel (1826/1912) maintained a theory that children instinctively sought unity in their world, and longed to understand “the life and language of the external world, and particularly nature, and to take it up into the self’s own life (p. 132). Education that immerses experience in the natural world would support a reciprocal relationship between the child and nature.

Spirituality is a central tenet of holistic learning, as educators maintain that human life is interconnected with all life and dynamic (Miller, 2006). As such there is a deep dimension of humanity that is often ignored in traditional education because of its association with religion. Holistic education supports the idea that “the true inner self of the person is not alienated from the
divine but is ultimately involves in the cosmic process of Creation” (Miller, 2006, p. 59). This connection to the inner self can emerge through the practice and experience of art, and is important in our collective evolving relationship with the Earth.

iv. Humane Education

Environmental Education in the curriculum should be reflective of a humane education, which is a pedagogy that respects and responds to peace, justice and harmony between the human and the nonhuman beings (Weil & Sikora, 1999) and encourages assigning intrinsic value to nonhuman lives (Rowlands, 2002). Humane education, which can be alternately identified as compassionate education, advocates empathy, respect, kindness and positive regard for all beings of the Earth community. It aims to provide an understanding and a means for connecting with others in the Earth community. One of the main objectives for humane education is to transform our fragmented understanding of the natural world and our place in it by promoting meaningful connections, integrity and wisdom for a just and healthy society (Pike & Selby, 1999; Selby, 2000; Caine, 2005). Naturally, humane education is an important part of environmental education, although it cannot be collapsed into the latter, because nonhuman animals as individuals should not be “flattened” into nature. Instead I suggest that the opposite, “new imaginaries” for breadth and connection, be infused into our relating with the ecological world. Nonhuman animals are individuals like humans (who are also animals of a kind), and like us they are part of nature. Humane, or compassionate education, accepts that animals have intelligence, sentience, emotional capacities, and the ability to communicate as well. The field known as animal ethology, which arose from Darwinism and modern biology, has demonstrated that in fact other animals have the same capacities for feeling, and animal ethicists argue that on that basis they should be accorded greater moral consideration (York, 2013). Humane education seeks to acknowledge these facts and address them by instilling in students a greater respect for nonhuman animal life.

Students from the second grade class I visited were able to observe small animals in their schoolyard and write poems about their experience. One student wrote a poem placing herself in
the experience of a bird flying over the school. She also realized the self-recognition an animal may experience and the love it may have for its young (see Figure 17).

![Figure 17: I am a Bird, (TDSB student, 2nd grade)](image)

Compassion in education “is based on a keen awareness of the interdependence of all these living beings, which are all part of one another and all involved in one another” (Merton, as cited in Donnelly, 2002, p. 304). Humane education is also a lens for teaching students the interconnectedness and importance of human rights, animal welfare, environmental protection and cultural diversity (Selby, 2000; Noddings, 2006; humaneducation.org). Combining a humane environmental perspective with the arts may encourage an appreciation for diversity and simultaneously play a role in shaping our collective understanding of the Earth as our one home. For example, the students in Los Angeles who created the animal sculptures out of bottle caps, cited earlier in this thesis, cared about the Earth and created art to incite change. Their sculptures became an expression of their love for animals who are suffering, and served as a kind of ‘bearing witness,’ which is the beginning of real awareness. As writer Leo Tolstoy (1997) relates: “when the suffering of another creature causes you to feel pain . . . come closer, as close as you can . . . and try to help” (p. 10). Many environmentalists and educators believe that humane education encourages students to view nature, other species, and the Earth community of which we are all a constituent part, with respect, compassion and empathy (Orr, 2004; Capra, 1982; Noddings, 2005).
This kind of connection is not only important for changing a cultural anthropocentric view of the world, but for coming closer to understanding of who we may be.

As we are dependent on the natural world for our very survival, humane and compassionate education is a means for understanding and responding to the important task of sustainability and life on Earth. It is a holistic approach to learning as it connects and integrates an understanding of the natural world and one’s place in it. Teaching concern and empathy for all life is an essential part of Environmental Education and eco-literacy (Goleman, et al., 2012). According to educators, one of the vital practices of eco-literacy is empathy for life (Goleman, et al., 2012). Empathy, as defined by the OED, means “the ability to understand and share the feelings of another” (Empathy, n.d.). To be empathic would necessitate acknowledging and reflecting on the diversity of other life forms on the Earth, honouring this diversity, and learning to recognize and respect the individuality of nonhuman animals who, in many cases, have complex personal histories and identities, no different in this respect those of human animals.

Educational scholar John Donnelly (2002) relates that the purpose of education is to “make a difference” (p. 304) and compassion and understanding of others is a first step toward making a difference in the world and in the lives of others. Understanding “reveals itself through a respect for the mosaic of all beings and all life”, and compassion bases itself in “caring and concern, and it deals with consequences and character” (Donnelly, 2002, p. 304-305). Art and technologies have been used for creating awareness of our diversity and our oneness. When the astronauts went to the moon for the first time and looked back, the image of the Earth was the most memorable and moving image they brought back. Blue and beautiful in the great darkness of outer space, it may be the greatest image of the 21st century because it calls on our humanity, our oneness, our compassion and our love for the Earth as a whole. It transformed our thinking about who we are, where we are, and what is, and should be, important.

Humane education is an ideal pedagogy for teaching and reflecting on the diversity of life and the interaction of life within the environment (Wilson, 1984). It encourages students to respect,
empathize and show compassion towards what Tom Regan (1983) has called ‘subjects of a life,’ which refers to individuals who seek pleasure and flee from harm, who have emotional and social lives, and who possess some degree of cognition, sentience, and an awareness of being in the world. Just as students are taught reading, writing, math, and science, it is important that they learn compassion and kindness towards one another, the Earth environment, and all living beings. An important part Environmental Education is empathy and respect for life, valuing individuals not only because of their membership in a particular species or because, like the polar bear, they are majestic, or on the verge of extinction, but because they are part of the living world.

Nel Noddings (2005), among others (Westerlund, 1982, *Humane*; Fox, 1982), believe that compassion needs to be integrated into the curricula not as a specific subject, but as a process. An extensive collaborative study was conducted in 1964 by the Humane Society of the United States and George Washington University that examined what as being done in schools with regards to introducing ‘humane education.’ The findings included the understanding that very little was being done to introduce it into the schools, although 1) educators from all disciplines felt a need and a readiness for it, 2) that implementation was feasible, and 3) that the “development of an awareness is a prerequisite to the humane attitude development” (Westerlund, p. 75). The main barrier is that most human beings are participants, through their diets, in systematic and unnecessary animal exploitation, which necessarily involves brutal violence against other animals on a mass scale, and there is thus an unwillingness to begin to address this ‘inconvenient truth,’ even when humans tell themselves that they ‘love animals’ and believe harming them is wrong. Children often treat nonhuman animals with care and compassion. For most children, it is a natural response to be kind and considerate toward animals and other living beings (Goleman, et al., 2012; Noddings, 2005) and to have compassion toward those that are suffering. Throughout the evolutionary process, human beings knew intuitively that their survival depended on relationships and that regardless of competition and basic needs, there is a dependence on other beings (Brizendine, 2007). We are social beings and a part of the web of life, yet we have been separating ourselves from the natural
world over the entire course of modern human civilization, and especially in the last century with the ubiquity of technology and industrialization.

Awareness is a key element in both Environmental Education and compassion in the classroom. As Westerlund (1982, *Humane*) related, it is a process that should be “an integral part of all subjects and all educational activities” (p.79). Although Westerlund was writing over thirty years ago his words are perhaps more relevant today than ever before. With growing ecological problems, including the loss of species and violent climate disasters all over the globe (caused in part by industrial livestock agriculture and systematic animal exploitation), how we respond and treat one another can very well be a matter of life or death. Compassion, as stated by Matthew Fox (1979), is not only a burden that we are meant to share in an effort to ease the pain of others; it is “the cluster of feelings that energizes our intellectual conceptions of justice as well as the statement of our deepest urges to love” (p. 42-43).

Art can nurture our compassion because it may engender a sense of wholeness and caring for the others. Similarly, technologies may be useful connecting to others and widening our circle of compassion. We are all inter-connected and there is a profound feeling that we are never alone in our actions, or our suffering. Compassion for others raises the important questions of eco-justice and how we relate to others in the world, how our actions affect others across the globe, and how we treat the Earth beneath our feet. Paul Waldau (2013) argues that we need to expand the definition of environmental justice to include nonhuman animals. As Daniel Quinn (1997) points out, to be compassionate is the ability to be a “leaver” and not a “taker” (as cited in Clarke, 2002, p. 52) during our time on the Earth. This quality is especially important in teaching students how to live sustainably. Being a “leaver” has broad implications for students today. Educator Paul Clarke writes in *Education for Sustainability: Becoming Naturally Smart* that all learning should revolve around the three conditions for sustainability: “the understanding of why and how we care for our planet, the understanding the need to care for each other so we can live harmoniously” and finally the “need to understand that there is need to care for ourselves which includes self-discipline” and
which requires rethinking consumption habits (p. 6). Ecological sustainability is predicated on “the interconnection of ourselves with the entire web of life” (Holzer, 2010). Art sustains this feeling of connection. Being a “leaver” involves the recognition that we need to rethink our consumption, and in so doing become more compassionate of others in the Earth community.

Compassion for the other is the world’s “richest resource” and needed “not for altruism’s sake, nor for philosophy’s sake or theology’s sake, but for survival’s sake” (Fox, 1979, p. 1). There is some recognition among schools, students, and communities alike that the Earth and the living beings of the planet need our time, attention, care and compassion if we are going to create a sustainable future. Art and technology for environmentally driven compassion can awaken this potential. Students have limitless potential themselves, according to Pam Clayton, the founder of the Tara Redwood School, which promotes the universal education of compassion. Clayton (2008) states in her own short documentary that teaching compassion is an awakening of potential and can lead to strength of character, wisdom and more learning. She instructs and explores without telling students to “be kind;” instead she asks them, “why be kind?” In turn the children explore that question. Using stories from an animal’s perspective, like a fish being caught, or an ant trying to survive, students at Tara Redwood are taught to consider all life with compassion, and this empathy, is sustained throughout life. A sixth grade student from the class I observed also created a multi media artwork for an 'Animal Art’ exhibit at the University of Toronto in 2012 (see Figure 18). The artist explains: “It says “Wake Up” because it’s a rooster, but also because people need to wake up that animals have feelings too.”
Educators know that working with children requires continuous reinforcement to create an awareness and to plant a seed for growth. Studies in reading show that a child’s interest in animals peaks in the second grade, and drops every year after that, unless a particular value is taught throughout the years (Westerlund, 1982, *Humane*). People are fond of saying “get them when they are young” about teaching a child a particular value, and there is some truth to that. Children are particularly sensitive to the feelings of others and will care for an injured animal. They can also be thoughtless and crush an ant or a spider without consideration. Compassion requires that one take a pro-active approach to help others and relieve them of pain.
Students can realize their role in creating change and how they can impact the world and their environments. Humane education, and eco-literacy, by extension, is participatory and emancipatory (Dewey, 1900/1963). Anti-oppression education often addresses human suffering and the need for equality (Friere, 1970/2002). It is an ideal means for teaching anti-oppression of animals and the Earth environment, as we are all interconnected, although at present most anti-oppression rhetoric is entirely anthropocentric and does not address nonhuman realities. Humane educator David Selby (1995) advocates that we teach respect for all living creatures. According to eco-feminist scholars, Zoe Weil and Raw Sikora (1999), being humane and being compassionate are interconnected:

The word humane means having . . . the best qualities of being human . . . : love, kindness, compassion, mercy, justice, integrity, courage, honesty, and wisdom. Being a humane educator means fostering these qualities and helping to instill compassionate values in the next generation. In this way, humane education is like preventive medicine – preventing the ills of some of our cultural habits and beliefs by creating awareness of suffering and offering new choices. (p. i)

This awareness of choice, and how we can affect the world, is central to the practice of eco-literacy and the teaching of empathy. When students learn kindness and caring for the Earth, they are prescribing to humane values that can transform society and the world, moving it towards a peaceful and less violent place that is sustainable (O’Sullivan, 1999; Pike & Selby, 1999; Selby, 2000). This kind of transformative learning is central to practice of eco-literacy and an important element of Environmental Education in the 21st century.

There are many scholars attempting to re-envision the urban lifestyle and narrative for sustainability (Stefanovic, 2012; Sobel, 2005; Gruenewald & Smith, 2008). Some are teaching and learning urban place-based education (Sobel, 2005), while others support a holistic model for learning (Miller, 2008; Orr, 2004). In many ways these and other educational paradigms that support connections with the complex world around us overlap and complement one another.
Counter arguments to what are considered alternative learning models and pedagogical approaches to learning, such as inquiry based learning, holistic, humane and place-based models, may be that they are not as effective or comprehensive as the traditional modes of learning, such as transmission based lecture, especially given the importance of teaching Environmental Education and all of its complexities. I endeavor to demonstrate through this research paper and analysis of studies and theorists that traditional education models for learning, which silos disciplines, and fails to teach students an empathy for all life and a love of the earth and of place, is an important context for teaching, curriculum and learning for the earth. I argue that non-traditional ways of learning are equally as effective for learning, as students cannot absorb and assimilate facts and numbers without being engaged in the subject, and art is a means for accessing the sensitivity and emotional connection to nature that is lacking in traditional curriculum models. Therefore, alternative approaches to learning, and engaging the senses and the emotions, is an important first step in being open to learning more about the environment.

III. Summary

This chapter examines existing educational paradigms. A shift from Environmental Education as a science to its integration across the arts provides the foundations for holistic learning, environmental inquiry, place-based learning, and humane education, which are all consistent with transformative Environmental Education. Educators, community leaders and international programs alike have begun to expand our understanding and worldviews for the environment; they also have begun to investigate and experiment with the use of the arts for Environmental Education. Chapter VI details the process and practice of Nature Writing, as an example of an arts practice where students use technology for Environmental Education.
CHAPTER VII: INTO THE FIELD

... recall the places of beauty you know. And then, on your chosen site, let memory speak.


I. Introduction

Over the course of the last two decades, I have taught English Language Arts, Environmental Programs, and Nature/Eco-Art programs to children, youth and adults in a variety of settings. All of these experiences, primarily in urban settings, confirmed my feeling that the arts and the environment are important for students and educators of all ages. The arts foster awareness, mindfulness, curiosity, connections, and self-expression, and can engender a sense of community and compassion for others and for the natural world. These things are meaningful, especially given the current state of the world and the ecological problems we are facing. In my work as an English Composition educator from 1998 until 2006, and then later teaching education workshops in 2010, I led many groups out into the field. Often this meant a local city park, or a ravine. This chapter looks at the pedagogical practice of Nature Writing, as an example of a place-based, holistic, and art-based attempt to re-connect to nature. It also provides a detailed illustrations of how the pedagogical practices I outlined in the previous chapter may come together seamlessly in one language arts classroom, or any classroom for that matter. This chapter is a practical approach to how an urban educator may enter into the field (metaphorically and pedagogically) with students of any age to seek out and observe nature, explore and connect, re-frame and relate to nonhuman animals and the living Earth. 30

II. Making Connections with Nature Writing

i. The Practice

30 Animals in the city can include companion animals and also ‘liminal animals’ who are wild yet live in urban areas, such as raccoons and squirrels, as noted in the book Zoopolis (Donaldson & Kymlicka, 2011).
Nature writing is an arts practice that may help students and teachers to become more aware of how they are part of the web of life, and Earth’s history. As Berry (1988) relates, “the human story is part of Earth story” and not the other way around. Becoming aware of this interconnectedness of natural systems and our true place in the natural world, in turn, helps human beings learn more about their particular landscapes, social systems and cultures. If students engage with nature writing, I argue that it can have a positive effect on them. We must not just help students to master different subjects in school, but must also help them to make crucial connections “between head, hand, heart,” and to cultivate the capacity to discern natural systems of which they are a constituent part, or what Bateson (1972) calls “the patterns that connect.” In other words, we must learn how to think holistically, and teach students how to do so as well. Students can then lead the way in helping all of us to reconnect with the Earth as a living reality, to see ourselves as part of a whole ecological system.

Nature writing, as I will try to demonstrate, is “experiential, participatory and multidisciplinary” (Orr, 2004, p. 55), and fosters “balance, inclusion and connection” (Miller, 2008, p. 6), all of which are necessary for a transformative Environmental Education. It seeks to merge body, mind and spirit, and break free from traditional linear modes of learning and atomistic thinking, which divide “knowledge into subjects, units and lessons” (Miller, 2008, p. 4). Within the traditional fragmented approach to learning, students “often do not see the relationships between subjects, or the relationship between facts within a subject, or the relevance of the subject to their own lives” (Miller, 2008, p. 4). The practice of nature writing, I would contend, is a useful way of introducing environmental awareness, which might serve to create, in some students, a deepened sense of awe and reverence for nature. Ideally, it would bring about a renewed understanding of our place in the natural world. It also presents an opportunity to merge an arts-based practice with technologies for environmental learning.
ii. The Steps: Observation, Interpretation, Speculation

According to nature writer and teacher John Tallmadge (1996), in his essay *Writing as a Window into Nature*, nature writing offers a “promising path toward the intimacy we seek, by deepening perception and understanding, by throwing the light of attentive imagination upon the green world we normally take for granted” (p. 30). As its goal, nature writing allows teachers and students to connect and participate with their environments within the natural and cultural history of their communities. It not only creates opportunities for observation, awareness, and productive experiential place-based educational programs, but also generates a sense of wellness and connectedness to the natural world. It is a useful way to connect academic disciplines and school subjects, thereby making the learning within each discipline more accessible and more interesting.

Writing can be daunting for both the novice and the experienced writer. Students often regard the blank page with fear and apprehension. It is helpful, therefore, to begin the writing process by asking students to step outside, to look at the world around them, and to start by taking uncensored notes. What separates nature writing from other composition lessons and classes is that the material is readily available. Students engaged in the task of writing are asked to take note of the many connections between their physical existence and the natural world that enables that existence. They can use their senses to explore the writing experience. An example would be closing one’s eyes and listening to the wind in the trees, or any sound that is close by, and then writing about it. One group of students explained, after this experience, how they often forget to listen because many of us tend to be visually dominant, to the exclusion of our other senses. Another example would be to place pen on the page and, as you isolate one sense at a time, record on the page in that moment the sights, sounds, touch and smells. Like a landscape painter who sits outside and translates her emotions onto the canvas, the student translates the immediate sensory experience on the page as it is occurring.

Writing is largely an unconscious act, although it is also very deliberate. Ideas can
originating in the unconscious but are then brought to light when pen meets the page. Teaching writing to students, from elementary to higher education, has never been more interesting or engaging as when we go outdoors and observe, in order to write. Observing nature can be accomplished simply by taking a walk around the campus or neighborhood, through a park or local green space, or in cases where the logistics and/or disabilities prohibit a walk outside, students can look out of a window. Even in an urban environment, there is a lot going on around the base of a single tree, in empty lots, in cracks in walls, and in the crevices of the cement. There is life going on in these small places, hidden to those of us not paying attention to it. The practice of focusing one’s attentions through nature writing may be likened to what Buddhist practitioners call “mindfulness.” Mindfulness can be defined the act of “being present in the activities” from “moment to moment” (Miller, 2010, p. 101). Seeing a tree or landscape anew, and feeling the natural beauty of it can engender a connection between the whole self and the Earth.

For writing in the field, students should carry with them a small sketchbook and a larger book for free writing and journaling. Older students might carry their cell phones or portable technologies for taking photographs or making videos. Students are asked first to observe, to keep their attention on their surroundings, and then to sketch, to make contour drawings, to draw comparisons, and to make simple, precise observations. They can also photograph, record, and engage with one another. The second step – that of free writing and journaling within nature – taps into the unconscious where all writing originates. Charles Darwin wrote field notes, which were only fragmented sentences, sketches and words from his observations. He then revisited his notes in order to speculate and further his explorations (Tallmadge, 1996). In the same way, students are asked to later retrieve their field notes to free write, explore and create. The emphasis is on observation, followed by interpretation, followed by speculation. This three-step process was developed by Brian Wolfe of Yale University to analyze paintings, but it has also been used by nature writers (Tallmadge, 1996). Students can take their field notes, which consist of observations and descriptions, to later free write, write in
their journals and perhaps even develop their notes into a bigger piece of writing. The student as editor comes into play once she has had ample opportunity to write freely and explore her connection to the out of doors. The observation period can be one that is playful, and an experience in flow. As one student relates: “I forgot we were in school! That was fun.” Later, students can use computers to write and make sense of their notes, review visual data, create more detailed maps, diagrams, web pages, blogs, and more; all students can become ethnographers or poets of place.

Students not only need time to write, sketch, jot down ideas but to explore with low stakes writing, a concept described by Peter Elbow (2003) in Being a Writer. The idea is that students should be encouraged to write without thinking about the content or being judged. They write without expectations or conditions. The easiest way to ease someone into writing is with low stakes writing.

As a teacher over the years, I have felt energy come across the page when students physically move into the field and engage with their subject. I have detected, over time, changing perspectives from student writing, and observed the formation of new ideas. Nature writing helps students develop sight, sound, touch, and smell, and to experience the outdoors anew. Descriptive writing needs sensory awareness, and nature writing is an ideal method to develop this. Being out of doors and open to the experience can arouse distant memories from childhood, re-awaken long-dormant senses, and generate mindfulness. The natural beauty of the out of doors, coupled an embodied learning experience can be inspiring and emotional. Natural encounters can solidify the mind, body, spirit learning connection; taking the time to identify the smell of bark, to feel the lightness of fall air, and study the patterns in the leaves all can give students the opportunity to really experience the world and their place in it. These opportunities for awareness and for observing beauty in the natural world can potentially awaken in students something wonderful and unique.

Students should be given the freedom to explore, though they can also be given ideas
for exploration. They can be asked to describe the colors they see, to observe something outside of their eye level, or to be vividly aware of the particular. Other instructions can be given which also help keep students from seeing the same things, to help them avoid writing with clichés. They can be asked to read into their surroundings the history and future of a place, or to imagine that they are animals within the habitat they are observing (Tallmadge, 1996). Recently, at University of Toronto, I led a group of fellow educators on a nature writing expedition, and one person shared her journal entry with the group: “I was holding the chestnut, and noticed the squirrel looking at me. It is a beautiful object and the squirrel too. I rarely notice them but they must watch us closely. Where does it nest? She feels my movements. Does she have a mate, or is it a he? There must be a way to know… maybe the tail?” She looked it up on her phone and wrote: “Apparently there is a difference!” (Personal Communication, May 10, 2013).

Students can also end up writing themselves into the process, creating autobiographical stories, exploring their emotions and inner life as they relate to what they are feeling and seeing outside. Sometimes the imagined life of another creature, or a plant, or a landscape becomes the dominant reality. Students can begin to participate in the process and unfolding of nature, and perhaps, with new eyes, begin to see their place in it.

### iii. Connection, Compassion and Creativity

Good writing originates from honest emotion. Nature writing can encourage inspiration, empathy, and visionary thinking. Scientists talk about a non-linear switch in assessing the effects of climate change which allows one to see that nature itself is non-linear. The natural world does not unfold in a straight line, but all over the place, at any given time. Nature is a complex, messy, but ever-changing text. There is no clear beginning, plot, or end, but it is

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31 Certain aspects of the climate system work like a switch, as opposed to a dial, and the non-linear switch refers to a threshold level of warming where such sudden changes in the planet would cause catastrophic system collapse.
http://www.pewclimate.org/policy_center/policy_reports_and_analysis/brief_timing_of_climate_change/timing_catastrophe.cfm
endlessly fascinating and dynamic when we take the time to look and respond. Correspondingly, art accesses the non-linear part of thinking. It can inspire participatory learning. A twelfth grade student from the class I observed for this study shared his writing:

As I touched the bark of the tree, I suddenly realized there were thousands of ants making their way up and down the trunk. I watched their moving, followed their trail, which went up as far as I could see, and then all the way down to holes in the ground. I watched them, awed by their movement as one, and imagined I was one of them; this one ant I followed with my eyes, putting myself into its movements . . . To think about how I almost sat up against this tree, up against them, without knowing.

As students jot down ideas they are encouraged to get in touch with themselves and their own intuitive sense of nature and the world. Developing their ideas and thoughts in relation to their direct experience allows students to fully explore their own relationship to nature and the self. This also allows for a bridge between logic and intuition. As noted in Miller’s (2008) work, Holistic Curriculum, this bridge is one of the tenets of a holistic education curriculum (p. 90).

Intuitive writing is honest and forthright. It taps into what the writer feels and knows directly. It allows writers to explore their creative and imaginative selves. The feeling of wellness, of mystery, and of wholeness that can come from being outside and seeing all that the natural world has to offer is part of the holistic learning experience. Being outside in this directed way is almost always a transformative learning experience.

Students may also find that nature writing gives them the opportunity to better understand local heritage and culture, giving them a sense of history to a particular place. They may find themselves taking on the role of explorers. These elements are evident in the writings of Thoreau’s (1854/1995) Walden. Nature writing may be used to observe, reflect and find intimate moments between the self and the natural surroundings of one’s locale. Whatever method is used, nature writing offers students a heightened sense of awareness and the opportunity to be outside, both of which have positive psychological effects. As noted earlier, Louv (2008) writes that there
is a direct link between the young and the natural world and a “growing body of research” that “links our mental, physical, and spiritual health directly to our association with nature – in positive ways” (p. 3). Research in the emerging field of eco-psychology demonstrates that exposure to nature is one of the most powerful therapies for attention-deficit disorders and other learning problems. Louv’s theory of nature deficit disorder suggests that a thoughtful exposure to nature can help heal this broken bond, and that this is not only in our “self interest but in the interest of planetary justice” (p. 3). He adds that “how the young respond to nature, and how they raise their own children, will shape the configurations and conditions of our cities, homes – our daily lives” (p. 3).

One of the effects of creating art may be the compassion, which is necessary for us to create sustainable communities. Nature nurtures creativity, but it also nurtures compassion. A seven year old girl who is my daughter’s friend recently told me that she loved her dog ‘Butter’ so much that she began to consider all the homeless dogs, and all the puppy mills near her own home which are needlessly cruel to animals. In an effort to raise awareness and help the animals, she wrote and illustrated a book about the ills of puppy mills, which was sold to raise money for the Waterloo Humane Society. Her actions reflect compassion in the way it is understood by “engaged Buddhism” – seeking insights through meditative practice and applying those insights to social and environmental issues. Compassion is thus more than an individual’s feeling for another person; it can extend to all beings, regardless of species, and to all persons, regardless of nationality or ethnicity or even when they were born. Ethicists now speak of intergenerational ethics to refer to the ethical imperative to take into consideration those born in the future.

Potentially, one’s compassion can be extended to include the health and future of all species on this planet, all future generations, and all of humanity.\(^{33}\) Insofar as nature writing contributes to

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\(^{33}\) By the year 2050, it is predicted that one-third of all the current species will be on their way toward extinction or already extinct (Call of Life, 2010, Species Alliance Film. Retrieved from calloflife.org). The Earth to date has experienced five mass extinctions due to natural disasters; we are in the midst of the sixth, the only one in history caused by one species.
this sensibility, it can also be, for some, a spiritual exercise.

The importance of connecting subject to self, and the self to the ecological systems that support us, is often an observation that comes to students who observe the outdoors. Coming to this awareness on their own terms allows learners to incorporate important lessons into their own everyday lives. Students and teachers alike can to look to nature for instruction and awareness. Our educational system, for the most part, is not offering opportunities for us to learn about our place in the natural world and how we are to live. However, when engaged in a regular practice of nature writing, students will often note the differences from one week to another as they examine changes in a landscape, read the differences they see and observe, develop hypotheses, and even research further something that catches their attention. Educators can also practice this art for learning. Recently, in my own nature writing practice, I looked back over a series of drawings and notes from previous years (2011 to 2013) to find the changes occurring in one area: “The birds have come a month early this spring - blue birds all over the Sierras. They are so beautiful but I also see this as it is – a ‘warming’ sign. What does this movement mean for the bugs and plants? Will the birds have the nourishment they need given that things are changing so rapidly in their environment?” Ideally, nature writing will help students see and tell such stories.

iv. ‘Trans-disciplinary’ learning

Ecological concepts and realities that may seem hidden can be un-earthed in writing. Writing engages the students’ imagination but can also reveal hidden relationships between subject and self, between disciplines, and between subject and community. It can redirect linear thinking, calling to mind Bateson’s “systems thinking.” As a practical and ‘multidisciplinary’ approach to learning, nature writing is an easy way to introduce students to writing and English Language Arts, but it can be easily used by science, history, math and art teachers as well. On a deeper level, it enacts a ‘trans-disciplinary’ (Kagan, 2011) way of recognizing the complexities and details in nature that make up the larger whole. Going outside, observing, and just writing down thoughts, allows nature to be the teacher and transcends disciplines for enhanced learning.
Students are empowered by their own observations. They can be brought closer to their subject, encouraged to engage in their natural surroundings, and listen to their intuition. They find that they become scientists, nature writers, detectives, and cultural historians, all at once. As Tallmadge (1996) relates, when students write as a window into nature they are discovering “variety, intricacy, and wonder of (their) home landscapes” (p.1). Narrative skills are discovered with free writing, but students may also move into directed writing and exploratory writing exercises. They can research the what, where and when of a place and create compositions that touch on a variety of subjects and disciplines.

Tallmadge (1996) states “when students practice natural history – that is, when they tell stories about people and nature – they are participating in one of the oldest arts. They are helping to create culture” (p. 29). As students begin to discover the connections between their subjects, and simultaneously to their own lives, they are able to think critically, creatively and compassionately. The subject, revealed in the writing process, can be personal, communal, or global. Nature writing can not only help the students become better writers, but it can also encourage them to be more thoughtful and responsible citizens. Their interests and their passions can come across the page and, in some cases, move out into their lives. For instance, nature writing has led students to observe problems in local water systems and rivers and begin to ask questions and seek answers in the process.

David Sobel (2005), in Place Based Education: Connecting Classrooms & Communities, states that 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” (p. 7). One of the objectives of this kind of learning is to “look at how landscapes, community, infrastructure, watersheds, and cultural traditions all interact and shape each other” (Sobel, 2005, p. 9). Sobel (2005) also emphasizes that this type of learning increases academic achievement. Place-based education is springing up all over the United States and Canada. It emphasizes hands-on real-world learning experiences. It
enhances students’ appreciation for the natural world and heightens their awareness as active citizens in their own communities.

One project, which evolved from a small grassroots school-and-community effort, was the making of a school vegetable garden, and then forging connections with local farmers to provide the basis for healthy school lunches. The Food Systems project, which began as a small place-based educational project, is now a bioregional initiative, funded by the United States Department of Agriculture, linking farms to schools, the California Health Department, and the Center for Ecoliteracy (Sobel, 2005). This kind of participatory approach brings students closer to their own backyards, to their communities and, ultimately, to themselves. It has been defined as “pedagogy of place” and seeks to restore the link between student, school, and community (Sobel, p. 9). Students are asked to respond creatively to the stories about where they live and to become a part of the community, not simply passive observers.

Arguing for an integrated curriculum, William Smith (1935) writes that “in order to be real, a learning situation must . . . revolve around problems which are germane to youth,” concern itself with “vital and crucial aspects to the world in which the youth is learning to live” and, finally, call for “creative behavior on the part of the learner” (as cited Beane, 1944, p. 15). Therefore the students’ use of the subject matter is the essence of their learning. These kinds of “experiential, participatory, and multidisciplinary” (Orr, 2004, p. 55) opportunities are also the hallmarks of holistic education. Interest in food and cooking can be viewed as a kind of art, just as wood-working and handicrafts are artful expressions. In this case, the living experience of food brought the community and the school together. The arts can lead to a ‘trans-disciplinary’ (Kagan, 2011) experience which is necessary for students to see themselves in the larger picture and to begin to appreciate the vastness and complexity of the Earth’s natural systems. This learning involves seeing oneself in the web of life, and reflecting on that complexity in a creative way.

Place-based learning is not merely an integrated curriculum around place, but one that
can inspire stewardship and renews a sense of civic duty where none may have existed. Using existing problems or issues in a community that need addressing, place-based education brings students outside into their communities to observe and work towards change. The learning opportunities for place-based education can arise directly from nature writing activities. Students begin with observing their environments, and then move into a participatory stage of learning. The twelfth grade students I observed during one nature writing activity felt that the writing they did bolstered their sense of community. One student in the class commented: “It’s like I never saw the park before, and it was here all along.” Domains of knowledge intersect and merge with this practice which links linear thinking with intuition, connects mind, body, and spiritual experiences in learning, connects nature to the self and the self to community, and understands the interconnectedness of all in nature.

Love, emotions, and intuition have not always been an acceptable part of the rational discourse in the sciences and in discussing the current problems in education. However, as Gould (1991) describes it (in Orr, 2004), if students are taught to love creation and the world around them, they will fight for it. Inspiring awe, mystery and a sense of connection with nature has an important connection to knowledge. When students are interested in a subject, and engaged with it, they become passionate as well. The fundamental principle at work here is that “our thoughts define our universe” (Ferruci, 1998, p. 103) and we can strengthen an idea by thinking about it. If we bring ourselves into nature, then it will bring itself into our lives. There is nothing more moving and passionate than our natural world. It is infinitely diverse and colorful. It inspires and brings a sense of peace and harmony without direct explanation. Teachers can allow nature to be the teacher and let the universe tell its story. We must listen to the Earth in order to save it. The universe is a spiritual and physical reality and has a sacred story to tell (Berry, 1988). Like Thoreau, Berry encourages us to listen to the story that nature is trying to tell. With art, we can listen, learn and communicate that story. We can observe, write, recollect, and re-write ourselves into nature, not seeing ourselves as separate from it.
One day as I accompanied the second grade class on a walk, and during a moment of shared reflections, one student said she had never thought about her connection to birds before. She relates in her writing: “Birds are my family.” Her learning experience can be seen as a burgeoning allegiance to the larger Earth community, and what Berry (1988) calls a “radical change in (our) mode of consciousness.” (p. 42). Sacred communion with nature is largely absent from our modern world and thinking, especially in the cities, but nature writing can help us forge a new relationship, or renew an old one. As a species, we have a “single destiny with the larger community of Earthly life,” writes Berry (1988, p. 43). The need for nature writing comes at a time when we are separated from the natural world and, intuitively, feel the need to reconnect.

The Romantic writers, as they experienced the effects of the Industrial Revolution, were drawn toward the positive experiences of nature writing. Coleridge and Wordsworth advocated going out into nature to be invigorated by it and then, later, returning to reflect and write on it. The landscape and nature reflects back what we have to offer. As Wordsworth relates in this excerpt from Resolution and Independence: “I heard the woods and distant waters roar/Or heard them not, as happy as a boy/ The pleasant season did my heart employ/ My old remembrances went from me wholly/ And all the ways of men, so vain and melancholy” (lines 17-21, p. 282). Here the poet perceives his happiness when immersed in nature. This kind of perception is necessary today in order to have a deeper and more direct relationship with the natural world. Writing, and by extension education itself, is a reflection of who we are, both as a culture and as a species. It is also a template for who we would like to be. Teaching nature writing helps students learn from nature and her inherent wisdom. It teaches self-awareness and how we are connected to the larger ecological systems that sustain and give life. It teaches us to honor and even perhaps love the natural world as it is. As Wordsworth demonstrates again and again in his poetry, his love for nature came from time in it as a boy and seeing her gifts. Nature fosters and feeds us intellectually, artistically, and creatively; it gives and continues to give.
v. Some Philosophical and Practical Objections

Certainly there are philosophical objections to nature writing: that it appears frivolous, unnecessary, and ideologically motivated; that it is not academically rigorous; that it seems impractical or necessary. However, as I have tried to demonstrate, nature writing is immanently practical insofar as it is transformative and helps achieve a much-needed paradigm for change for the sake of all species, including humanity. Furthermore, its goal is to educate the whole student, within his or her own environment, and thus presents a learning opportunity, which promotes cooperation, participation, and first-hand experience of the world. This is far from frivolous or unnecessary, unless one is judging an activity according to a very narrow set of criteria in which economic growth is paramount and nature and even human health and well-being are seen as secondary. Lastly, it is true that nature writing may not be academically rigorous, but learning how to write, in whatever context, and how to observe details and report on them, can contribute to academic excellence. The “text” students are asked to investigate is not a book; it is the natural world itself and their place in it. Furthermore, as we know from the history of empirical sciences, simple and direct observations of nature form their historical foundations; thus nature writing is, on one level, a simple scientific undertaking, and on another level, a hermeneutical exercise and, on yet another level, a creative and therapeutic exercise. Students are inundated with theories in the normal course of their educations; there is thus something to be said for more direct experiential non-theoretical work. Nature writing in these many ways represents a new paradigm for teaching, writing, and other disciplines. It allows for a non-linear transformative approach to learning, in contrast to “the transmission model” which is primarily lecture-driven (Miller, 2008, p. 10).

III. Summary

This chapter uses Nature Writing as an example of an arts based practice that can take learning out of doors, and engage students of all ages. Examples from K-12, and in higher educational settings, demonstrate its potential for transformative environmental learning. Nature
Writing is an ideal vehicle for teaching connection, compassion, holistic learning, environmental awareness, and place-based education. Nature Writing aims to connect students to their natural environments. In communicating an understanding of the living systems around them, students are acknowledging the importance of living in greater harmony with the Earth. Nature Writing can be a simple writing and/or scientific exercise, but it can also become a creative and therapeutic exercise, where students are able to observe, explore and absorb the aesthetic of place. As a pedagogical tool, Nature Writing, like other artistic experiences for self-expression, can help educators and students create an aesthetic experience that engenders environmental sensitivity, which has been identified as one of the main goals of environmental education. Exciting the hearts and minds of students is never an easy task, but as Nature Writing so simply illustrates, nature is the best teacher. Given the opportunities to playfully and creatively engage with their learning and the Earth, students respond with artful and beautiful ways.
CHAPTER VIII: CONCLUSION

The universe is transformation; our life is what our thoughts make it. Marcus Aurelius (121-180 CE)

I. Overview

If a healthy relationship with the Earth is dependent on a new relationship with the Earth and new ways of thinking, learning and feeling, adopting Earth-centered worldviews, through exploration with the arts, is an important way to engage students. Educators can play a role as guides and co-learners with students to navigate the minefield of new technologies and media, given that there is an understanding that it not does replace time in nature but simply enhances the nature experience. The logic follows that various ways of knowing, such as presence and meaning, can emerge from our direct experiences with nature, but also through the symbolic experience of the arts. Symbolic and vicarious experiences can be meaningful for Environmental Education, especially when students are able to invest and creatively envision and imagine, reproduce and represent their own ideas and interests for their communities and their natural surroundings. The arts, coupled with the use of technologies and media, can help students move into a co-creative dialogue, and find connections and a balance between nature and culture, their real experiences and their own self-expressions. This concluding chapter reiterates the main points in this thesis, namely the role of the arts as a means for transforming worldviews and helping students connect to the natural world. I anticipate some practical, philosophical and constructive objections in the mind of the reader and respond to those objections, before concluding with a synthesis of the whole work.

II. Re-Imagining the Earth

i. Shifting Paradigms, Shifting Focus
Students, schools and communities have always been drawn toward the possibility of creating a better world. A cosmological shift and a new vision for education are needed to change our environmental trajectory (Berry, 1988; Clarke, 2012; Orr, 2004; O’Sullivan, 1999), and develop an ecological consciousness and connection to the Earth. As Berry (1988), Orr (2004), O’Sullivan (1999), and others have argued, we need a transformative education in order to help us move into the ‘Ecological Age’ (Berry, 1988). While the traditional curriculum has changed to some degree, incorporating sustainability and environmental issues, Environmental Education is still predominantly considered a non-value laden science, intended for problem solving. We need a pedagogy that is pervasive across the curriculum, is not afraid to openly incorporate values, and is not restricted to environmental studies exclusively, but instead opens the ‘head, heart and mind’ (Berry, 1988, p.36). I suggest with this theoretical study that an engagement with the arts, and the use of modern technologies as a tool for this exploration and engagement, are a means for transformative environmental learning. The rich and diverse experiences nature has to offer can help promote environmental sensitivity and a re-imagining of their place in the biotic community.

Our ability to restore the life systems of this planet is directly related to a fundamental shift in education: “the skills, aptitudes, and attitudes necessary to industrialize the Earth and not necessarily the same as those that will be needed to heal the Earth” (Orr, 2005, p. xi). This shift also involves seeing the world and learning holistically, not as a category, or end. That is, we need to approach nature and learning as an experience that is dynamic and ever-evolving. I suggest in this thesis that we balance meaning and presence (Gumbrecht, 2004) with the practice and experiences of art, in order to bring us closer to the ‘transdisciplinary’ learning that Sasha Kagan (2011) suggests is at the heart of the patterns in nature, and which Capra (1982) is ideal for understanding the arts. Finding patterns in our lives and nature can help us also broaden our understanding of wholeness, interconnectedness, balance and dynamic change. Instead of viewing the environment as a category or discipline, the arts can open the head, heart and mind for ‘timeless learning’ (Miller, 2005). Art and nature as evolving experiences can transcend our need to
categorize, compartmentalize and control the ‘other’ and can co-evolve in a dynamic relationship with our communities, nature and culture.

Different educational paradigms and ideologies can support and foster a profound respect for other living beings and the natural world by challenging existing worldviews. Holistic education, place-based learning, compassionate education and an environmental inquiry-based learning approach are all means toward redefining the curriculum and guiding students toward a re-imagined relationship with the Earth. I evaluate these pedagogical models in light of an arts based Environmental Education.

Holistic education is founded on the principles of balance, inclusion and connectedness (Miller, 2008), all of which are essential for ecological learning. Balance is an important concept for environmental learning, especially in our culture when media and technologies are dominating our environments, and creating an imbalance, which is unhealthy. The arts in Environmental Education can help students look at the relationship between mind and body, to see the connection between head and hand. Compassionate education (also called ‘humane education’) fosters sensitivity and mindfulness of vulnerable nonhuman persons, the countless victims of human greed and indifference. The need for harmonious fraternity with nonhuman animals is very old and deep, and is ignored not only at their expense, but also at our expense, on multiple levels.34 Place-based learning raises awareness and can help student both engage in their communities and envision a new relationship with the natural world.

Environmental inquiry and sensitivity can play a significant role in addressing environmental concerns (Thomashow, 1995; Palmer, 1998). Students can become more caring and thoughtful members of the biotic community when their innate curiosity about nature is nurtured.

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34 By using nonhuman animals or taking away their habitats we do the following harms to our species: 1) health costs of increase risk of cancer and heart disease; 2) public health risk of pandemic disease borne in factory farms; 3) environmental cost of industrial livestock operations, causing global warming and water waste; 4) psychological harm caused by cruelty to animals, which Tolstoy ties to violence and war between men; a reverence for life is conducive to emotional well-being for humans; 5) the mass extinction of species and death of oceans is potentially fatal to humanity, which relies on sensitive ecosystems held in balance by wild animals; 6) a world without animals is lonely and bleak and unlivable.
through experiential learning opportunities, and their learning is integrated (Orr, 2004; Chiarotto, 2011). Efforts in teaching environmental inquiry at the elementary school level have proven to elicit children’s interest in the natural world and helped to create a transformative vision for education (Chiarotto, 2011).

All of these pedagogical practices are useful for a transformative Environmental Education, helping students, schools and communities create new systems – similar to the ‘systems’ in nature. Beginnings are messy, and complex, but as educators shed light on the relationships between different disciplines, such as arts, media, and technologies, students can begin to inquire, relate, reflect and communicate their visions for the Earth.

**ii. Reconciling The Double Bind of Technologies**

Children and youth, as I have demonstrated, are drawn to technologies, which are useful but deterministic (prescriptive) and limited in what they can teach us. When technologies and media dominate our lives and learning, other experiences are lost, such as time in nature, artistic expression, and creating space for community, family and friends. These experiences challenge us in part because we cannot control them, and they help us grow emotionally and creatively as a result. Technology has a place in our lives, and to adopt ‘hybrid thinking’ (Louv, 2008), simply means recognizing nature as the context for all things, and bringing culture (technologies and media among other human constructs) into balance with that understanding. *Kayaanisqatsi*, which is the Indigenous Hopi word for “life out of balance,” is also the title of a compelling film that demonstrates how technologies and urban life have dominated our internal and external landscape and how this can play a destructive role in our collective psyche. People in ancient hunting and agrarian societies lived in intimate ecological relationships with their local landscapes; as a result, they did not feel separate from the natural world. Their technologies held a place in their lives as well, but only as tools to respect and use for the greater good.

Technologies create what Bowers (2000) call the ‘double bind’ – they can be destructive, but they can also be useful tools for imaginative and creative engagement with learning, if they are
used critically (see The Ten Principles for New Literacy of Technology in Chapter V). Technology can enhance and foster but not replace direct experiences with nature, which are crucial for real engagement and forging an ecological identity.

iii. Art and Nature Experience

Recognizing our inherent connection to the natural world, and the role culture plays in our lives and learning, this thesis seeks to demonstrate, in theory, how the arts can help enhance human creativity (Sauve, 2005), critical thinking, and imagination for the future and for living compassionately in the present. An art-based Environmental Education, as I wish to demonstrate, can help us seek out connections with nature in a sensory and spiritual way (Sauve, 2005), and technologies can enhance this relationship. The arts can help us re-imagine and re-connect to nature in embodied, experiential and critical ways. Contemporary artists are “making ecology of place the primary subject of their work” because learning to “see, become aware of the beauty of the world, of the possibility of defining sacred place, is an essential step toward ecological responsibility” (Graham 2008, p. 34).

The arts can challenge existing conventions and worldviews that are reflected in the traditional curricula, reflecting the needs of students and integrate learning that is relevant for their lives (Kagan, 2011; Inwood, 2008). The arts can educate our emotions, provide a window to the natural world previously unimagined, engage students in a dialogue with one another and their communities, and help them develop a sense of connection and place. As I have shown, the arts are a dialogic praxis that invites us to participate in listening and sharing with one another. It gives us opportunities to see and hear the perspectives and stories of others, and examine our dominant cosmologies and ideologies.

As Berry (1988) relates, we need new stories for sustainability, and we must incorporate and listen to the voices of the Earth for ourselves and for all of the inhabitants of the Earth. Inclusiveness, which seeks to incorporate the voices of others into our worldviews in a meaningful way, is highlighted in my methodology, and is important for recognizing the voices of nature,
including those of non-human animals. Nature is the greatest teacher for sustainability, in part because it is complex and dynamic, in part because we can learn from the living systems therein, but also because it can open our ‘head, hearts and minds’ to creative thought. Nature can be revealed by science, but it is not “essentially an energy or information system” but something that “befalls us” in “living interplay” (Bonnett, 2009, p. 182).

III. Some Philosophical and Practical Objections

Some possible objections to this thesis may be that I do not give a substantial overview of arts-integrated programs and practices. While I do give some examples, and know that there are many more, it is not the scope of this thesis to engage in a comprehensive list of such programs and practices. Instead, I focus on the philosophical aspects of the subject, with some examples. One could also criticize the philosophical breadth of this thesis, but I respond that the complexities of nature are reflected in the complexities of the human condition, and we are at a time in history that requires deep introspection and a critical assessment of where we are, who we are, where we are going and why. I believe that education is the architect for how we are to construct ourselves, and art plays a role in this context. I look to Orr (2004) who articulates that it is “not a problem in education, but of education” (p. 26). True learning for the Earth aims toward consciousness. In setting out my thesis, I rely upon the philosophical foundations provided by the seminal works of Berry (1988) and Orr (2004). I do not feel it necessary to defend their theses in detail, as they and others have already done that important work. Rather, the main objective is to explore in detail the intersection of the themes they outline: biocentrism, cosmo-centrism and the advancement of these worldviews through Environmental Education and the arts. So while my thesis may not provide a defense for the biocentric or cosmocentric worldview, it is not intended to; it already assumes the necessity of that perspective, and explores a particular way in which biocentrism and a cosmological perspective can be advanced through education.
Another objection may be that I do not deconstruct the ‘arts’ into different sub-disciplines and examine them individually. This is a conscious decision, in part because I am aiming for ‘wholeness’ in context and in content. Orr’s (2004) argument is that when we fragment the curriculum, we fragment learning and the world. This is also demonstrated with the problems inherent in traditional curriculum models that are founded upon the Cartesian influence of mind/body split. Therefore, I approach the ‘arts’ as a whole experience, and one that reaches across many disciplines and learning styles. I aim to articulate the sensitivity and wholeness that can come from the experience of art and time in nature, not to name the actual activity, discipline, or domain. The subject and scope of this thesis is not to deconstruct the arts, although I acknowledge that a macro/micro view of the arts and corresponding assessment is valuable. By invoking the theory of “trans-disciplinary learning” I intend to transcend these distinctions for this thesis only, which is to provide cohesion and clarity to a rather ‘messy text.’ The examination of Nature Writing simply provides a practical and applicable example in the practice of the arts and education. This does not reduce the arts to one subject, or fragment, but provides a context upon which to ground the philosophical considerations put forth in this work.

A particularly serious objection could be the view that artistic freedom is compromised by being subjected to political / ideological influences. That is a valid concern, if one considers the history of the diminishment of art under the Nazis, resulting in their categories of state-approved art (adhering to an Aryan ideal), and state-condemned art (so-called “degenerate art”), which did not adhere to their limited and limiting ideal of beauty, but in their view reflected ugliness and racial inferiority. Would art that advances a utopian ideal of an Ecozoic Era be no better than fascist or Communist approved political art? The difference between the use of art to advance Environmental Education, as envisioned here, and the totalitarian use of art lies in the ethical vision that Environmental Education represents. Environmental Education, as I have tried to articulate here, is radically inclusive of all human beings, all non-human beings, and all life forms in general. Unlike fascist or Communist approved art, it does not subscribe to a utilitarian ethic of exclusion,
which had the effect of dehumanizing people. Environmental Education, as articulated here, seeks to re-humanize humans and re-animalize animals by envisioning them as existing within a biotic community.

While it is true than any ideal, no matter how grand, can be subverted to evil purposes – and environmentalism is no different in this respect, as Tom Regan pointed out in his critique of “environmental fascism” – that is precisely why it is important to articulate a eco-feminist ethic of care and inclusivity when expressing environmental ideals. I believe that my particular vision of Environmental Education does that. This ethic of care is notably lacking in totalitarian ideals and uses of art, where instead we find a complete lack of care or concern for both humanity and non-humanity, and a willingness to sacrifice them both to a dehumanizing technocratic futuristic state-controlled political ideology. Another fundamental difference is that art, as I envision it, must not be restricted by the state, or state-approved agencies, or by other authoritarian bodies such as corporations. The artist must have complete and total artistic freedom, and that freedom is consistent with this overall vision, which celebrates creativity and human freedom, community and diversity, and rejects limitations on the human soul. Berry’s cosmological vision, which is central to this thesis, sees environmentalism as fundamentally creative and expansive; it expands and enlarges us, by re-introducing us into the biotic community; it does not diminish and limit us, as does anthropocentrism. Art that advances this vision would, for the same reason, enlarge the human soul, not diminish and restrict it in the way that totalitarian visions of art have done.

In this reply to potential criticisms, I have yet to mention the influence of capitalism on art, and should take a moment to do so. Capitalism has had the unfortunate effect of diminishing art by subjecting it to market forces, which has excluded some very good artistic expressions from reaching the masses and, at the same time, has promoted some rather shallow formulaic imitations of art for financial profit (e.g., popular culture icons, such a Miley Cyrus). This is a market diminishment of art, as distinct from a state diminishment of art. The use of art for Environmental Education bypasses this particular problem by endorsing the use of art in the education system.
Although the education system is, by definition, part of the state, educators can and should act independently of the state in the best interests of students, and typically they do.

There is now a widespread consensus among the vast majority of scientists that we are in the midst of a man-made climate crisis, and this fact is widely acknowledged by the public and by educators. Rather than limit education on this issue to science and geography classes, as is being done for the most part, it should be the role of educators (according to Orr, Berry, and others) to introduce environmental learning into every part of the school curricula, especially at the higher levels of education, because the implications of climate change for society touch on every aspect of human society, and thus can be incorporated into every discipline – including the arts. The arts are easily accessible for children and can help them to nurture a love for the Earth and animals, and grow up to be thoughtful and compassionate stewards of the Earth who can then approach issues and problems plaguing the inhabitants of the Earth. As Rachel Carson (1956/1998) states: “It is more important to pave the way for the child to want to know than to put him on a diet of facts he is not ready to assimilate” (p. 27). The environmental ‘issues’ and ‘facts’ are a necessary part of being a part of this world today, but as I hope this thesis demonstrates, it is equally important to be in it - to nurture creativity, curiosity, imagination, compassion, and a desire to play at any age.

IV. Aiming for Wholeness

As the climate crisis unfolds before our very eyes (e.g. receding glaciers and submerged island states, stranded and emaciated polar bears, forest-killing pine beetle infestations, new reports of drought and wildfires, record numbers of eco-refugees, and record temperatures every year, among other things), it has never been more important than it is today to adopt an Earth-centered worldview and educational model for learning. Instead of grasping after short-term economic gain, which can be seen in our over-extended use of oil and our highly dysfunctional relationship to the Earth at present, transformational learning has the potential to bring about “awareness” and an “evolutionary, organic view of change” (Miller, 2008, p. 64). We need to experience the landscape
“as a vital reality” instead of something we move or “fly” over (Orr, 2004, p. 55). We need to aim toward “wholeness,” especially in a world we have “fragmented into bits” (Orr, p. 11). The arts, as I have attempted to demonstrate, are a way toward re-connecting to the natural world and to feeling whole, again.

Art can help students recognize the connections between mind, body and spirit, which is a necessary step in forging connections in order to develop compassion for other, to be a morally responsible member of society. Transformative learning aims to teach “wisdom, compassion, and sense of purpose in one’s life” (Miller, 2008, p. 30). Technology can, in some cases, enhance reflections in this dynamic relationship, although, as I have tried to demonstrate, it cannot replace our time in nature and the direct experiences which are so valuable for listening, learning, and transforming our knowing of who we are, and our vision of who want to become. Technology is also fraught with risks (problematic use, over-use, causing addiction), which educators need to be aware of and try to mitigate. Art is one way to re-establish this necessary and inherent relationship between the self and the Earth.

According to Berry (1988) and David Suzuki (1997), we need to regain a relationship with the Earth from cosmocentric and holistic perspectives, seeing ourselves within an evolutionary and geological framework. We need to give students opportunities to be in nature, not above nature. If “all education is environmental education” (Orr, 2004, p.xi), whether we teach the young that they are a part of the natural system or, by exclusion, not teach them anything, we are instilling an important lesson. Students, as they struggle to make sense of climate change and communicate their understanding and place in the natural world, need time to re-imagine their relationship with the Earth in a variety of ways. The arts are one way to experience and communicate a “new story” for the Earth, and to re-imagine our place in the nature of things.

_We shall not cease from exploration_

_And the end of all our exploring_

_Will be to arrive where we started_
And to know the place for the first time. (T.S. Eliot, 1963, p. 222)

Figure 19: Cherry Trees on Campus, R. York, Toronto, ON
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Informed Consent Parents/Guardian, Students
Proposed Study: Working Title: Eco-literacies, Art and Media: A Study of Student Engagement

Principal Investigator: Rachel York-Bridgers, Doctoral Candidate
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Dear Parents/Guardians and Students,

I am a doctoral student in Education and Environmental Studies at OISE/University of Toronto in a collaborative degree with School for the Environment. Currently I am studying how students engage with environmental concepts and learning through media literacies, and the arts in their classrooms, and hope to observe a classroom in your school for my proposed study. This research aims to generate a discourse around the possibilities for transformative learning and promote environmental learning across the curriculum. With your permission, your son/daughter/ward will be asked if he/she would like to participate in this study. Participation is completely voluntary and will not affect your son/daughter/ward’s attendance or his/her evaluation by the school or teacher. All information will be strictly confidential.

If you are interested in participating, please read the informed consent form and indicate if you permit your son/daughter/ward to take part in this study. Your attention and participation is greatly appreciated.

1. Purpose of the Study: Eco-literacy, Art and Media: A Study of Student Engagement is a study of the relationship between student art and media practices and environmental literacies, pedagogy and student engagement. The study will record Grade Two (2), Six (6) and Grade Twelve (12) students in their school classrooms in order to examine this engagement and provide opportunities for students to create, present, reflect, respond, and explore the foundations of environmentally responsible practices within the discipline of Media Literacy, English Language Arts and Media Arts. My goal is to record the students’
imaginative process of creating stories and using media to connect with place, people and the natural world.

2. **Procedures to be followed:** I, Rachel York-Bridgers, will observe a Second (2nd) and Sixth (6th) grade classroom at Hillcrest Community School, and a Twelfth (12th) grade classroom at City School in Toronto. The observation will take place for approximately 8 weeks during scheduled class time. It will occur at a convenient time for each classroom sometime between the dates February 1, 2012 to May 26th, 2012, for up to 6 hours per week during class time, and for no more than four weeks per class. Observations time will be approximately 2 hours per class every week, more or less, for a period of time agreed upon by teacher, and researcher.

   Students (under 18 years of age, with parental/guardian and teacher approval) will be asked to volunteer to participate in the study. Documentation of the classes and students may include: written observations annotated in a field journal (for grade six and twelve), visual observations of the work recorded using digital stills, and semi-structured interviews to be conducted with the participants. Student media and written work, teacher lesson plans and materials used to teach media/literacy/art/environmental education units may be considered data given consent. All participants will be invited to participate in discussion and analysis of their learning experience and process of engagement.

3. **Discomforts and Risks:** There are no risks in participating in this research beyond those experienced in everyday life. Students will be familiar with the researcher from being in the classroom and interviews are conducted in a semi-structured manner for no more than fifteen minutes (15 minutes) at a time, by allowing the participant to talk about their work in the way they so choose. Interview Questions to the students will be: “Describe your project in your own words” “In what way did this project/work change your way of thinking about nature/environment/animals?” “How did you share your work with others?” “What role did the media have in your environmental project?” “Did this experience change how you feel about nature and role of media?”

   Questions for the teachers will be: “What did you learn from your students who were engaged in this study?” and “Has this experience helped you consider any new ways of teaching environmental education?” I may also ask other questions that relate to connecting to nature such as: “Do you feel people (you) are a part of (connected to) nature?”

   At no time during this project/study will participants be judged or evaluated for their work, or for their responses.

4. **Benefits:** This study will (ideally) generate a discourse around the possibilities for transformative, and pedagogical implications of media and multi-literacies for environmental learning. The study will raise important questions about how and when we teach environmental education, about the relationship between the sites of media and art for new ways of engaging with nature and environmental concepts.

5. **Duration/Time:** Classroom observation details, including the number of weeks, days per week, location and dates are indicated above (see procedures). In addition, participants (teachers, students, schools) can participate in the planning of where research happens, it’s duration, and how it occurs. Participants can also volunteer to be interviewed. Interviews can take place at school, during or outside of class time, or at the discretion of the teacher/school administrator, and parent.
6. **Statement of Confidentiality:** Participation in this research is confidential. The data including the digital images will be stored and secured in a locked file and office in The Ontario Institute for Studies in Education at the University of Toronto. Within the written dissertation, no personally identifiable information will be shared. Information will be shared through the use of pseudonyms, unless the participants ask that their information be shared. Images, of artwork created in the classroom or of participation in the study, will be used only upon consent and names will not be used in conjunction with the image, unless requested by participant (or parent/guardian) over the age of 18.

7. **Right to Ask Questions:** Please contact Dr. Linda Cameron (supervisor) at 416-489-2822 (lcameron@oise.utoronto.ca) or Rachel York-Bridgers (student) 416-658-2911 (Rachel.york.bridgers@utoronto.ca) with questions, complaints or concerns about this research. Questions about your rights as a research participant may be directed to the University of Toronto’s Office of Research Ethics at ethics.review@utoronto.ca or 416-946-3273. You may also call this number if you cannot reach the research team or wish to talk to someone else.

8. **Compensation for participation:** There is no compensation available for participation in this study. A pizza luncheon will be provided to the participants at the end of the unit to celebrate their work. Students will also be invited to show their work at an open gallery space at University of Toronto, with a reception for the participants and their guests, or shown as a school exhibit, as deemed appropriate given the participants and the teachers.

9. **Voluntary Participation:** Your (or your child/ward’s) decision to be in this research is voluntary. You (or your child/ward) can stop at any time. You (or your child/ward) do not have to answer any questions you do not want to answer. Refusal to take part in or withdrawing from this study is acceptable without questions asked at any point throughout the study and unit. If your child/ward is the participant, your support and permission is necessary for him/her to participate, and you will be informed about the process and study as it progresses throughout, and you will have access to the data at all time during the study and afterwards. Your child/ward will not be able to make decisions about his/her participation without your knowledge and consent.

Students, who are under 18 years of age, must have parental/guardian permission in order to take part in this research study. If you agree to allow your student/child take part in this research study and the information outlined above, please sign your name and indicate the date below. The student must also sign their name and indicate the date below.

You will be given a copy of this consent form for your records.

Sincerely,
Rachel York-Bridgers
I give permission to participate in this research project, as follows:

Yes  No
☐  ☐  audio taped interviews, personal communication
☐  ☐  digital photography and video of art work samples, and other media
☐  ☐  digital photography and video of identifiable facial images, for research purposes only
☐  ☐  digital photography and video of identifiable facial images, for future public use in conference presentations and/or published material
☐  ☐  Sharing of written / visual work

An opportunity to withdraw consent for the use of any identifiable images will be offered at the end of the study as well. Images of participants will not be used in the study; but images of their work may be used.

Your signature below indicates your consent to participate in the research study.

_______________________________________________________________________
Participant Name & Signature  Date

_______________________________________________________________________
Participant Parent/Guardian Name & Signature (if participant is a minor)  Date

_______________________________________________________________________
Person Obtaining Consent Name & Signature  Date

Appendix A