Mental Health, Well-Being, and Access to Nature at School:
A Review of Change at the Toronto District School Board


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## Abstract

Access to nature and spending time outdoors can improve students' mental health and well-being, whereas deprivation from nature can have deleterious effects. Many authors, scholars, and researchers have noted the physical, emotional, developmental, and academic benefits of connecting with nature. This research aims to identify and support connections between mental health and environmental education within the formal school system, in order to draw attention to beneficial outcomes that may result when nature is seen as a vital component of learning and growing in childhood. The main goal of this research is to integrate the goals of environmental education and mental health policies by drawing upon ecopsychology, which centralizes the symbiotic and therapeutic relationships between humans and nature. Methods are comprised of an interdisciplinary literature review combined with a discourse analysis of primary documents from the Toronto District School Board, the Ontario Ministry of Education, and the Ontario EcoSchools programs. Based on the literature and emergent topics from these policies, findings are discussed in the form of six key themes that encapsulate the potential connections between mental health and environmental education at school. These are: literacy, stewardship, school ground naturalization, safety, resilience, and school culture and pedagogy. This research suggests there is now the space and momentum needed to shift new instances of discourse towards a worldview based on inclusivity, not separation from nature. This paper concludes by highlighting the untapped potential of a pedagogical approach to education that acknowledges the interdependence of human and ecological well-being, for the development of a healthy and sustainable future.

**Foreword**

In order to fulfill the requirements of the Master in Environmental Studies program at York University, I have participated in academic courses and field experiences, as well as completed this Major Paper. The area of concentration outlined in my Plan of Study, entitled *Knowledge to Action in Environmental Education*, is comprised of three components designed to encompass the scope of my learning objectives over the course of six terms of study. These three components are food and agricultural production in Canada; environmental education and consciousness; and environmental philosophy and ecopsychology. By the end of my first year of study, my area of concentration came to focus on the connections between children's health, the education system, and nature experiences, as they contribute to full human development. My Major Paper uses an interdisciplinary literature review to acquaint the reader with the potential connections between ecological and human well-being, in the context of children's experience within the education system.

My major paper is a synthesis of two of my learning objectives. Within my component entitled environmental philosophy and ecopsychology, one of my learning objectives was "to be able to use environmental philosophical and psychological lenses to add depth to my understanding of the relationships between nature and child development and well-being". By including the premises and key insights of ecopsychology in my literature review, I have endeavoured to add theoretical depth to the intuitive claims about the value and importance of nature in human life. Furthermore, I have drawn upon research from the field of environmental psychology to show how much empirical work is being done that also supports the claims of ecopsychology, namely that human well-being is deeply connected to the Earth's well-being.

Within my second component, environmental education and consciousness, my final objective was "to integrate discussions of children's mental health with environmental degradation to articulate ties between the health of humans and the health of the environment". In doing so, I have specifically highlighted mental health and well-being as an area of interest because the health of today's youth is greatly impacted by the ecological crisis, disconnection from nature and local places, and an education system that does not consider the plethora of benefits that arise from time spent in nature. Additionally, a discourse analysis of resources from the Toronto District School Board, Ontario Ministry of Education, and Ontario EcoSchools has allowed me to consider the real-world possibility of integrating mental health and environmental education policies.

I have endeavoured to connect my interests in environmental philosophy and theory to the real-life context of how environmental education is taught and practiced. Both of the above objectives involve the integration of theory with practice, whether that be through applying the theories of ecopsychology to empirical research, or examining pedagogical approaches to education in order to consider the future possibilities for policy change.

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**Introduction**

There has been a rising interest in the role of both mental health and access to nature in the learning of children. An opportunity is missed for collaboration unless these trends are viewed within a discourse of human-and-nature relationships, because access to nature and environmental education can improve both students' academic achievement as well as their mental health. This is the central concern of this paper, and the following introduction will present some of the main arguments and contextual evidence for advocating the centralization of nature and mental health in children's education.

While it is relatively easy to draw correlations between time spent in nature and *physical* health in children (Louv, 2007), it is much more difficult to assess the *mental* health of children and how it is impacted by immersion in, or deprivation from, nature. David Orr (2002) attempts to describe how many of the ways in which children act out or develop mental health issues originate in something that is not readily visible and he says, "we have unwittingly begun to undermine the prospects of our children, and I believe that at some level they know it" (p.279). He cites exposure to chemicals, development of lands, disordered and unhealthy eating, desensitization via media, commerce driven education, and climate change as some of the many factors affecting and influencing children and their well-being (Orr, 2002).

The rising incidence of physical and mental health disorders in children like depression, type II diabetes, learning disabilities, hyperactivity (and ADHD) may be due to increased diagnostic screening (leading to increased diagnoses by pediatricians), but deprivation from nature is also emerging as part of the puzzle, as posited by Richard Louv (2005; 2011) through his term "nature-deficit disorder". Scholars are beginning to

entertain this possibility partly because of evidence that shows the overwhelmingly positive effects nature *can* have (Strife and Downey, 2009). Two brief descriptions of empirical studies done on the subject of children and nature draw attention to some of these positive effects.

A study conducted with rural children designed to investigate the hypothesis that nature can be a buffer of stress found that self and parent-reported levels of stress were lower in children who had higher proximity and time with nearby nature (Wells & Evans, 2003). Nature as a buffer means that it, "attenuates the adverse effects of stressors or other adverse main effects on health or well-being" (Wells & Evans, 2003, p. 316), and this is just one of the many reported beneficial roles of nature. A lack of nearby nature is also one example of the disproportionate effects of environmental problems on children (Strife & Downey, 2009).

Another study adds significantly to the understanding of how certain psychological mechanisms are activated or developed through interaction with nature. Chawla, Keena, Pevec, and Stanley (2014) used observation and interviews to demonstrate that green schoolyards can reduce stress (performing a restorative role), as well as serve as a place to form supportive relationships with peers and develop a sense of competence (protective factors for resilience in the future). Green schoolyards can come in many forms, and the three used in this study were wooded areas, naturalized habitats on school grounds, and gardens. The school and its surrounding environment are very important because, "in contemporary urbanized societies, where few children have opportunities to encounter nature…schoolyards are frequently seen as sites where children can develop

knowledge and care for the natural world" (Chawla et al., 2014, p. 1). Knowledge and care, specifically, will be revisited as precursors to pro-environmental behaviours.

These results demonstrate that attending to children's mental health and well-being could be a priority at schools, facilitated by enacting policies that actively promote access to green play and learning spaces. However, educational policy has become a global competition of smarts that pushes students to "win", employing mechanistic metaphors of efficiency that turn schools into machines that rely on standardized testing to push marks up quickly, without questioning whether this even constitutes as teaching anymore. This orientation contrasts starkly with one that places children's health and well-being on par with their academic performance.

Williams and Brown (2012) have listed some of the effects of this mechanistic orientation, including de-contextualized learning that has no reference to lived reality, a loss of curiosity and wonder through constant exposure to dichotomous relationships and homogenous environments, and privileging intellectual knowledge over the practical. The above effects are very important in terms of their implications for place-based education and environmental literacy, two of what, I believe, are central components of environmental education.

The term environmental literacy is often used in the environmental education literature but its usage is unclear. Given that it is not grounded in a theoretical or philosophical framework, it is difficult to measure, assess, or relate to pedagogy and practice.  If literacy is something that extends beyond the ability to read and write print materials, then there is opportunity for growth in how it is conceptualized in the field of environmental education. Orr's (1992) environmental literacy is comprised of

understanding how people relate to both larger society and natural systems and their interrelation, grounded in the study of history, ecology, and other subjects so as to become aware of the depth and causes of the environmental crisis (p.93). Stables and Bishop (2001) refer to weak and strong conceptions of literacy to tease this out, when the environment itself is seen as a text. They identify several features of 'strong' environmental literacy including the ability to make sense of the environment in functional, cultural, and critical spheres (Stables & Bishop, 2001, p.93).

However, within institutional education, the definition of what it means to be an *educated* person is disconnected from the environment, and specifically the land (Gruenewald, 2003). Reading the local landscape and its layers of history and meaning is a skill that goes unnourished. Perceptual knowledge, and the meaning created through direct experience and use of all five senses, are rich sources of learning which promote care and attachment. Therefore, the concept of environmental literacy involves a deeper kind of knowing than what is factual, and a place-based element of literacy also allows for cultural and critical components. Cole (2007) captures this well in describing her experiences as an environmental educator. She describes how, "in the midst of our hip waders, water quality-testing equipment, and computers, was an unanswered question of history, culture, politics, and power" (p. 36). The content and methods of her teaching were still reproducing the cultural assumptions and kinds of knowledge that she had been taught, those that gloss over and do not make space for criticality. Even though Cole (2007) did her best to include experiential and localized learning, she believes that without knowledge of the ways that race, class, and land ownership had impacted the

systems around herself and her students, they could not holistically understand the relationship between themselves and the land they were living with (p.42).

Environmental education is susceptible and vulnerable to power dynamics within academia, business, corporate interests, and the economy, evidenced through the popularization of teaching technological solutions, economic sustainability, and instrumental rationality rather than critical social approaches (Gonzalez-Gaudiano, 2006; Gruenewald, 2003). Indeed, it is true that the environmental problems that are to be tackled in the 21st century and onwards are, at the core, the result of social systems and power structures that have denied the importance of anything that can be felt, but not seen or measured. From this perspective, the environment becomes reduced to its "minimum form of expression" (Gonzalez-Gaudiano, 2006, p. 297). In alignment with a worldview dominated by economic growth, this minimum of expression can best be described through a resourcist view of the environment- it is comprised of raw materials to be used in the production and consumption of goods and services. Neil Evernden (1986) describes how a resourcist view of the environment precludes the ability to develop strong environmental literacy and attachment to place. He says, "if we encounter nature as natural resources, then we deny it any of the character of worldhood. And we simultaneously deny ourselves access to it as home. It is characterized by space, not place" (Evernden, 1986, p. 66).

Many children in developed and industrialized communities have more mediated than direct experiences with nature, often in the form of *technological nature*, technologies that "mediate, simulate, or augment the human experience of nature" (Kahn & Hasbach, 2012, p.5) such as games, television documentaries, or digitized scenery.

However, media adventures with remote environments cannot replace the developmental role that nature plays in forming attachments and critical abilities. While there are species going extinct, there is also widespread extinction of ecological interactions, which impedes the ability to have meaningful relationships with the more-than-human world (Williams & Brown, 2012, p.9).

Place-based education is so important because children cannot be trained, as they are in formal abstract education, to save the environment. Simply getting children outside will not breed a generation of eco-warriors. Space needs to be made for this to happen naturally in contextually grounded situations over time, through practice and involvement in ecologically related activities (Matthews & Limb, 1999, p.66). Place-based education shifts the scale of education from global to local, because there is value in becoming literate in your *own* place of living, and to forming a relationship with the land, perhaps even bestowing it some of that "worldhood" (Evernden, 1986, p.66) it has lost. Additionally, I believe a substantive relationship with place can help put the environmental crisis into focus, instead of relegating issues like climate change, habitat loss, and pollution to far away parts of the planet.

The school itself is an excellent location to practice both environmental literacy and place-based education. Many individual schools have undertaken efforts to naturalize their school grounds in order to improve the implementation of environmental education, but there are ample opportunities to simultaneously foster mental health and well-being via exposure and attachment to natural spaces. Something is clearly awry with the way modern education divorces students from the "real" world, opting for abstract, repetitive information instead of the cultivation of knowledge in context. This homogenous

orientation to teaching and learning is a microcosm of the broadly homogenous experience of living apart from the natural world. The diversity and complexity embedded in local flora, fauna, histories, and cultures offers an antidote to many of the social and physical structures that impede full and well-rounded development.

This introduction has briefly discussed the therapeutic role of nature, environmental literacy, and the importance of returning to the local scale via place-based education. I envisage environmental education through an interdisciplinary and critical lens in an effort to de-centralize the dominant reductionist scientific approach to learning, as well as cultural and social discourses that contribute to both human and non-human destruction, though of course there are myriad other perspectives. The intent of this paper is to use this interdisciplinary lens as a starting point to explore the potential symbiotic relations between cultivating strong environmental literacy, a sense of place, and strong mental health. Instead of viewing children instrumentally, and shaping them for a progress-driven and technological future, education can reorient its responsibilities toward children's health, including emotional, physical, social, spiritual, and ecological health (Williams & Brown, 2012, p.200).

**Research Aims, Questions, and Objectives**

The aim of this research is to integrate discussions of children's mental health and the natural environment within the discipline of education. My main task is to locate and assess studies that have examined various positive and negative outcomes of exposure to nature on children. Preference is given to studies focusing on pre-teen cohorts because, as will be delineated further on, primary curriculum documents for elementary education are

being reviewed. However, given the latency and cumulative effects of lack of nature

time, results from older age groups can still prove insightful. Academic, peer-reviewed

studies are the primary source of findings in this research because, while there are many

examples of successful initiatives that bring nature back into children's lives (through

non-profit organizations, the provision of grants, and alternative education programs), it

is vital to answer the questions of *why* these kinds of programs are important by

elucidating *how* nature affects children behaviourally, emotionally, and developmentally.

There is a plethora of anecdotal support for the contention that nature is extremely

important to children, but a review of the academic literature can lend these implicitly felt

truths more validity.

In order to explore these relationships in a local context, I have chosen to critically

assess documents from the Toronto District School Board (TDSB) and Ontario Ministry

of Education (OME) that may mention (or tellingly omit) the topics of environmental

literacy, place-based learning, and mental health. These primary documents will be

critically explored using a discourse analysis informed by the results of an

interdisciplinary literature review. The combination of both literature reviews and

discourse analysis of primary documents provide the means for offering suggestions for

future amendments that clearly relate students' functioning and well-being to their ability

and opportunity to connect and learn with natural environments. This combination

reflects a paradigmatic shift that I believe has implications for a coherent and holistic

vision for the formal education system.

Introductory documents from the OME including *Acting Today, Shaping Tomorrow*

(2009) and *Shaping our Schools, Shaping our Future* (2007) are necessary for reviewing

and introducing current policy frameworks and curriculum guidelines for Environmental Education. These two reports form the basis of Environmental Education in Ontario. My criteria for selecting and analyzing further documents are: elementary curriculum documents, mental health documents, and any other material that pertains to the content of, and ideology behind, how environmental education is taught and conceptualized. In reviewing the webpages of the TDSB, OME, and Ontario EcoSchools programs, I have been able to explore the possible implications of the way these documents are designed, their content, and whether or not topics are integrated or categorically separate. For example, a cursory glance at the TDSB website will reveal that the topics of health, nature, and mental health are each discussed in isolation (see tdsb.on.ca). What does this imply about the potential integration of children's health and well-being with that of the environment? The two documents I have chosen to focus on are the TDSB *Children and Youth Mental Health and Well-Being Strategy (2013-2017)* and the OME elementary curriculum publication *Environmental Education: Scope and Sequence of Expectations (2011)*. Several resources compiled by the Ontario EcoSchools programs will also be shown to be relevant in terms of curriculum links to the greening of school grounds, ecological literacy, and environmental stewardship.

The central question of my research is: could an ecopsychological perspective, focusing on the symbiotic and therapeutic relationships between humans and nature, provide a way to better integrate mental health with environmental education as it manifests in the formal education system? In order to attempt to answer this large question, other sub-topics and relevant questions will also need to be assessed. These are described below through three primary objectives.

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*Objective 1- Make connections between students' well being and their opportunity to access and engage with natural environments*

Conducting a literature review and extracting relevant results and data that pertain to children and nature will fulfill this objective. The databases used include ProQuest and Environment Complete. Search terms include: children/youth, nature, well-being, environmental/ecological (and variations), environmental education, and education for sustainability. Specific journals include *Environmental Education Research, Journal of Environmental Education, Ecopsychology,* and *The Canadian Journal of Environmental Education*. Though not used as a search term, the subject of mental health may be present in the literature reviewed and this will be an indication of whether there is integration of mental health with access to nature. A literature review on the topic of "ecopsychology" will also be undertaken in order to establish a philosophical starting point based on the mutuality of human and environmental health, to be used as a guideline for the following interpretive inquiries.

*Objective 2- Integrate school ground naturalization explicitly in the goals of the Toronto District School Board's Mental Health Strategy*

What kinds of school ground naturalization, such as school gardens, are present in the literature? A similar literature review to the previous one will be undertaken on the topic of school gardens, using the following search terms: school gardens, naturalization, place-based, education, pedagogy, and environment/ecological (and variations). Part of this literature review entails reviewing pedagogical orientations to education because theories and practices of teaching that explicitly emphasize local and experiential learning may also implicitly support school ground naturalization and gardens as sites for

learning. The final component of this objective is to locate opportunities within the TDSB

"Mental Health Strategy" to incorporate school gardens and other forms of naturalization.

*Objective 3- Locate and suggest paradigmatic shifts within the Environmental Education and Mental Health discourses that support an ecologically integrated model of health and well-being*

Our worldviews are constructed to make sense of reality, comprised of paradigms

(i.e. mental models that provide guidance for thought and action) that we usually do not

even question because we are not consciously aware of them (Huesemann & Huesemann,

2011, p.272). Huesemann and Huesemann (2011) suggest a worldview based on

inclusiveness rather than separation to tackle the ecological crisis, facilitated by paradigm

shifts in all major fields of human activity, including education.

Can the formal education system support a paradigm shift in such a direction by

incorporating new research findings on the topics of children, mental health, and nature?

The above literature reviews and the assessment of primary documents from Toronto and

Ontario will aid in addressing this final objective. The findings of my literature reviews

allow me to critically assess what is happening in the realm of environmental education at

the municipal and provincial level, as well as identify underlying frameworks that guide

policy and curriculum such as capitalism, technology-driven society, and the dominance

of scientific reductionism. In order to advocate for change, it is first necessary to keep our

eyes and ears open to signs that indicate it may already be happening. Certain features of

the primary documents will be integrated with findings from the literature to make

explicit connections to ecopsychological posits and place-based educational pedagogy.

The wealth of available research will help solidify the importance of moving education

forward in an ecologically integrated fashion, in order to prioritize both human and environmental health and wellness.

**Outline of Major Research Paper**

The first chapter of this paper consists of a literature review of the topics of children, nature and environmental education followed by an outline of the research methodology. The purpose of this chapter is to familiarize the reader with current research and literature that can inform our understanding of the primary documents. This will be followed by an explanation of the discourse analysis undertaken to operationalize the literature review for the purposes of critically assessing the primary documents. Following this, Chapter 2 describes the primary documents to be analyzed, as well as introducing the reader to seminal documents about environmental education in Ontario and Toronto. Chapter 3 contains the main thematic findings from the primary documents, and discusses them with reference to current research and theories. Finally, the Conclusion builds upon the preceding two chapters by offering suggestions for altering and improving upon the TDSB Mental Health Strategy and Ontario's stance on Environmental Education.

My aim is for this research to provide some ways by which to update environmental education theories and practice through the inclusion of current research from the disciplines of education, psychology, and ecopsychology. There are many inspiring examples of initiatives at schools around the world that highlight some of the positive steps being taken to bring nature back into students' lives in meaningful ways. Environmental education can be enriched to improve not only academic achievement and

meet guidelines in creative ways, but to nurture children's development and health.  I

hope this research contributes to these exciting possibilities.

**Chapter 1- An Interdisciplinary Review of Child-Nature Relations**

A central argument of this research is that human well-being is in fact also the well-being of the earth, and destruction of the earth results in human suffering. The formation of connections with nature (including other species, landscapes, and biological processes) benefit children emotionally, psychologically, and physically (Chalquist, 2009; Chawla, 2007; Kellert, 2002; Louv, 2005; Velarde, Fry, & Tveit, 2007). In turn, the well-rounded development of ecologically attuned children has potential benefits for the environment. The most prolific and committed environmental citizens often had significant relationships with nature in childhood (Bell, 2001; Chawla & Cushing, 2007). Individuals like John Muir, Aldo Leopold, and Edith Cobb all draw upon personal recollections in vouching for the importance of conservation (Fox, 1981; Leopold, 1987; Cobb, 1977). Therefore, it is for the sake of both humans as well as the environment that I put forth this research, because the health of one entails the health of the other.

In exploring the possibilities of reforming education, grounded in the relationship between humans and the natural world, it is necessary to become familiar with key terms, theories, and practices that support and show the positive effects of contact with nature in childhood. I draw upon the connections between mental health and nature, children and nature, environmental education, and school gardens to provide the reader with substantive background on these complex interrelations. This literature review will aid in contextualizing my three objectives of: 1) making connections between student well-being and access to nature; 2) voicing the importance of school gardens in conversations of mental health at the Toronto District School Board (TDSB); and 3) exploring potential

paradigm shifts in education that can promote student well-being through holistically

connecting mental health with ecological relations.

This literature review will now look at the underlying roles of capitalism,

urbanization, and science, the philosophical model of ecopsychology, the importance of

outdoor play, issues in formal education, environmental education, the pedagogical

approach of place-based education, and the history of school and therapy gardens. This

chapter then explains the methodology used to fulfill the three objectives of this research.


**A Word on Capitalism, Urbanization, and Science**

At the turn of the 19th century roughly 3% of the world was considered urban, but by

the 20th century urbanization was being recognized as a growing social phenomenon.

Currently, some 200 years later, half of the world's population lives in cities (Wohlwill &

van Vliet, 1985, p.83). The global population has also been steadily increasing, projected

to peak at 9.6 billion by the year 2050 (UN, 2013). As growing numbers of humans

consume more of the Earth's resources at rates that cannot be maintained, it is important

to remember that human "progress" is actually embedded within a finite, closed system

that has its limits.

Urbanization is the real-world representation of the abstract ideas of capitalism and is

also tied to models of infinite economic growth. Economic growth is facilitated by the

constant development of technologies that increase the speed of material production and

consumption as well as the faith that technological progress can solve all problems.

Environmental education advocate David Orr (1992) writes that technological optimism

and economic growth are both "deeply embedded in the modern psyche" (p.4). However,

it is questionable whether there could be technical or economic solutions to the dwindling limits of the Earth's carrying capacity. Global crises of food, cheap energy, and climate change encompass a range of interrelated systems including resource use, waste management, cities, agriculture, water, politics, and human values and spirit. The "official version of the way the world is" is often defined as the Cartesian world-view, or scientific reductionism, which pieces the world into parts to be examined individually, often neglecting the fact that pieces are interconnected parts of systems that do not behave in isolation with predicable results to the working whole (Evernden, 1985, p.103). Hueseman and Hueseman (2011) also note that, although science has revealed so many of nature's relationships, these do not capture the totality of the situation. Humans are *also* a part of the complexity of life, a truth often passed over by reductionist discourse, creating a chasm between humans (the observers) and nature (the observed). We are conspicuously absent from the environmental crisis, but it is becoming increasingly clear that humans are the context as well as the cause. This paradigm has outlived its usefulness in addressing the complicated problems arising from human abuse of nature's resources, and the psychological condition it has left us in.

School gardens, naturalization projects, and alternative models of education are all reactions to this societal condition of urbanization and rapid growth, spurred by the parallel influence of capitalism and models of unlimited economic growth. Gardens and alternative pedagogies of education are practical responses to the feeling that change is needed, that something about the crowded and homogenous experience of urban life is incompatible with health and well-being. There are aspects of urbanization that affect children in profound ways, making it all the more important to investigate how changes

within the field of education and practical projects on school property can recover some of what urban density has taken away from children's lives.

Urbanization and industrialization are two main culprits in the rapid decrease in children's opportunity to play in and experience nature-based habitats (Rivkin, 1997, p. 61). Cars have restructured the outdoors through the construction of roads and highways and the danger of high speeds. Many children are also driven to school now, sometimes because of distance and other times by convenience, missing out on precious time spent in walking to school. Urbanization also means that roads and buildings occupy what used to be vacant land and water, and dense housing in particular offers little space for nature.

The privatization of public space has significant effects on children living in urban areas, and is highly representative of capitalist society, which transforms public land or common spaces into private properties, creating a condition in which everything is owned and there are few places to go and play (Fisher, 2013, p.198). The new surge of interest in food and learning gardens in urban schools and other unused land in urban areas can be seen as the last stand of "the commons" in dense cities where everything must be owned, bought, or earned, and perhaps they can preserve some of that magic or "alchemy" that happens when children are allowed to "do some clamber and damage" (Pyle, 2002, p.319). For as will be discussed further on, playing in nature and developing connections with the natural world are beneficial for both children's developmental needs as well as accomplishing the goals of environmental education to foster environmental stewardship and citizenry.

Given that capitalist ideals have prompted the buying and development of vacant space, the density in cities becomes all the more overwhelming. Higher levels of stress

occur in high density situations like crowded cities through several mechanisms including interference of privacy and perceived lack of control over an event or in general. Stress also generates anxiety, which can interfere with exploratory and play behaviours in children (Wohlwill & van Vliet, 1985, p.82). This could be because there are just too many people around or in the way, and at school, high density leads to the need for more structure (teachers need to keep an eye on many more students and regulate their activities in a small space), and less time for exploration and play (Wohlwill & van Vliet, 1985, p.83). Furthermore, poor urban planning creates literal roadblocks for pedestrians and makes it difficult for children to access what open space there may still be (Strife & Downey, 2009, p.114).

The broad forces of urbanization, population growth and density, and the modern psychical entrenchment of capitalism and economic growth form the backdrop of environmental education. The dizzying task of environmental education is to locate the environment within this context of humans, skyscrapers, cars, and asphalt. As we will see, nature is the very context of human *being,* so how has this been forgotten? It has been paved over physically, but nature is also absent from the human psyche.


**Ecopsychology- Finding Words for Human-Nature Relationships**

If we do not even realize that connections with nature are vital to the well-being of both humans as well as the world as a whole, an opportunity is lost to rectify the ecological crisis and the psychological deficits and pathologies that accompany it. David Kidner (2007) has put forth the suggestion that the increase in diagnosed depression in industrialized societies is partly due to the way the sense of self has been compromised

and eroded to fit a mechanistic, capitalist, progress-driven model (p.125). Subjective well-being *does* increase with wealth, but only to a certain threshold where basic needs are met, and yet in many industrialized countries vast increases of material affluence co-exist with a rise in psychological disorders (Huesemann & Huesemann, 2011, p.215). The psychical ramifications of a fundamental disconnection from the human context of being embedded in the natural world represent the internal dimensions of the external situation discussed in the above section on urbanization.

When ecological devastation occurs, it is felt as a psychic distress, but the relationship between human and more-than-human well-being is difficult to conceptualize. If the source of the wound is ideologically denied, inappropriate coping mechanisms are turned to in an effort to deal with a paucity of psychosocial and human-nature integration. Perhaps even consumerism, the pursuit of individual acquisition, can be viewed as one of many addictions and ineffective coping mechanisms that act as substitutions for constructive methods of healing (Gonzalez-Gaudiano, 2006). It is so important to be able to *validate* feelings of sadness, fear, and anger in response to ecological devastation, because it is a legitimate cause of emotional distress (Fisher, 2013, p. 219). Technological innovations and the superfluity of material goods are designed to satisfy what are inherently non-material needs through material substitutes (Huesemann & Huesemann, 2011, p.208). Higher order needs like the need for belonging, self-esteem, and self-actualization cannot be fulfilled through material gain, so these deeply important needs often go unmet.

Ecopsychology is an interdisciplinary field that could have much to contribute to the research on nature's role in child health and development (Louv, 2005). Ecopsychology

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draws attention to the fact that humans need nature for their physical and psychological well-being (including personal well-being, full development, ethical politics, and environmental sustainability) by reminding us that human evolution and development has, for almost all of its existence, occurred in the context of interacting with the natural world. However, this has been forgotten, resulting in a disconnection so drastic that we now intentionally destroy and separate ourselves from nature, and have shifted towards a scientific culture based on impartial research and verifiable data (Kahn & Hasbach, 2012, p.1). Ecopsychology is "a response to the profound ecological and psychological illiteracy that accompanies the modern alienation from nature" (Fisher, 2013, p.199). It is therefore a useful field of study and practice for investigating the shifting priorities of society towards human and ecological health.

Ecopsychology differs from environmental psychology by taking "ecology" as its root term instead of environment, which, in the literature, often refers to the built environment. Ecology can also be problematic by only referring to practical science approaches specializing in biological classification and other reductive scientific methods (Evernden, 1985, p.5). However, it has also been defined as the study of patterns and systems in nature. Ecology can be "concerned with understanding the complexities involved in the relationships between organisms, from individuals through populations and communities to species and the biosphere, with their total environment" (Hill, Wilson, & Watson, 2004, p.48).  This definition captures the key element of *relationships* in nature, supporting the ecopsychological premise that humans and nature have deep reciprocal bonds. The value of an ecopsychological approach is that it adds an internal human dimension to these relations.

Ecopsychology was coined as such in 1992 by Theodore Roszak in *The Voice of the Earth*, but remained a fringe movement due to its outright rejection of empirical science. Even though ecopsychology emerged out of counterculture movements of the 1960's, Kahn and Hasbach (2012) suggest that instead of such intense opposition to empirical science and technology, integration may be a better path because many studies from other disciplines can support the fundamental tenet that nature is beneficial and intertwined with the human psyche (Hasbach, 2012, p.120). It has been proposed by Kahn and Hasbach (2012) that there are five orientations toward ecopsychology- ecological unconscious (which explores the pathological relationships between the human mind and nature), phenomenology (stressing the importance of experience as the source of knowledge and meaning), interconnectedness of all beings, transpersonal (focusing on the role of nature in optimal mental health and psychological development), and transcendental (the supernatural and spiritual) (p.7). Though there are specific underlying assumptions at the heart of each of these orientations, they all articulate the importance of human-nature connections for personal, social, and environmental well-being.

Theorists like Paul Shepard (1995) and Theodore Roszak (1992) use the ecological unconscious to show how dysfunctional the relationship between humans and the natural world can become, perhaps even mutating into a cultural pathology (Kahn & Hasbach, 2012, p.4). For these authors, the ecological unconscious represents a deep evolutionary record, in every psyche, of our place within natural systems (Roszak, 1992, p.320). One of the roles of ecopsychology is to "awaken the inherent sense of environmental reciprocity that lies within the ecological unconscious" (Roszak, 1992, p.320), and thereby help break the human alienation from nature. Closely associated is ecotherapy,

the therapeutic modality based on the theories of ecopsychology, just as psychoanalytic theory is the foundation for the practice of psychoanalysis, for example. Hasbach (2012) stipulates that ecotherapy must involve a human facilitator (likely in the form of a psychotherapist), because just *being* in nature is not enough to constitute therapy, though it does have its documented and intuitive benefits (p.118).

Writers within the field of ecopsychology have generated several terms that help put into words the emotional and psychological complexities of the human relationship with nature. Many of them harken to E.O Wilson's *biophilia*, defined as a love for living things (1984). Three terms I find particularly interesting are *topophilia, ecophobia,* and *solastaglia*, because they have implications for the emotional connection to, or disconnection from, nature in childhood and adult life. Topophilia refers to an emotional bond with place, coined by W.H. Auden and Yi-Fu Tuan (Samson, 2012, p.25). Sampson (2012) hypothesizes that humans have an innate bias to bond with local places, which differs from E.O. Wilson's biophilia in that it specifies *local* living *and* non-living components (p.26). Elsewhere it is described as a "mild human experience" characterized by aesthetic appreciation and joy of connectedness with place (Albrecht, 2012, p.256).

Ecophobia is defined in juxtaposition to biophilia, and "ultimately involves a rejection of the values of life and represents a retreat into fear, taming, domestication, or removal of other life in the construction and management of the built environment" (Albrecht, 2012, p.255). This is important because if ecophobia develops in childhood, there is little chance that children will, in the future, be invested in environmental problems and will also never receive the psychological benefits of connecting with nature. Solastalgia describes the feeling of melancholy that accompanies the deterioration

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or transformation of an environment one felt attached to, a kind of homesickness while still at home. This is not a biomedical phenomenon, but an existential and spiritual one (Albrecht, 2012, p.256). So in many ways it is a condition that arises when love for nature causes emotional pain because of loss, a feeling so common in our relationships with other people but not often extended to the natural world.

These nuanced facets of the human relationship with nature are valuable in unpacking the many ways in which children are affected by a deficit of nature in their lives, or the destruction of natural places that they are attached to.


**Children and Nature- A Predilection for Outdoor Play**

A considerable amount of recent research has confirmed what most may implicitly take for granted, that spending time in nature is beneficial, but it is now also recognized that we suffer without nature. Richard Louv's term "nature-deficit disorder" (Louv, 2011, p.3; Louv, 2005) encapsulates this idea, and though it is not meant to be a diagnostic term by any means, it puts into words some of the cumulative effects of deprivation from nature. Louv has noted that children with nature-deficit disorder have much less informal contact with the natural world, especially in urban areas, depriving them of opportunities for emotional growth and self-discovery, the literacy needed to face the ecological crisis, and exercising imaginative and complex ways of thinking (Albrecht, 2012). Even many adults have come to realize that they too suffer from nature-deficit disorder (Louv, 2011, p.2). If future generations are to have healthy dose of "Vitamin N", Louv's term for the cumulative physical and mental health benefits of the mind/body/nature connection

(Louv, 2011, p.5), nature in childhood must be re-prioritized, especially in the form of play.

Paul Nahban, Stephen Trimble, and Edith Cobb have all stated that children need wild places (Fisher, 2013). Between childhood and adolescence, the "halcyon" middle childhood, young humans seek out a place where they can engage in self-discovery, and experience the natural world very acutely and profoundly as they play, explore, and imagine. Play behaviours in natural spaces (especially those that include refuges) differ from those in more traditional playground settings, characterized by much more sustained imaginative play, in part facilitated by the sense of security provided by hiding spots (Heerwagen & Orians, 2002, p.52). While preschool environments sometimes heed these preferences, elementary playgrounds tend to be dominated by asphalt and sports fields.

Children should not be deprived the chance to develop a deep bond with a natural place, that can be returned to always. As soon as children enter the formal education system, they are forced to "outgrow" their animality and become distinctly human-not-animal, the institutionalized endpoint being a moral, intellectual, individual (Fisher, 2013, p.86). The body becomes morally wrong, and overshadowed by the intellect. Similar to the way mental health's narrow comprehension of what constitutes normal behaviour perpetuates a fear of deviating from this norm, the school system's suffocation of children's wildness is legitimated by a constructed fear of everything non-human. Children may have evolved to seek out little refuges, along with other evolutionarily adaptive behaviours that are not adaptive in modern society, but where can children find natural refuges in sterile and structured environments (Heerwagen & Orians, 2002, p.52)? Outdoor play allows for aimless exploration and slow-paced discovery, which may be

associated with creativity, stress reduction, and self-esteem, and natural refuges give children a sense of security that facilitates extended imaginative play behaviours. But fear of potential accidents, inability to see the students (but that is why these places are appealing to children, the sense of enclosure), and potential legal backlash prevent schools from indulging this childhood need (Heerwagen & Orians, 2002). This is compounded with the aforementioned destruction of animality, such that "unstructured and free play in natural outdoor settings is prohibited by a climate of fear of the unknown" (Williams & Brown, 2012, p.20). Play is something that has become domesticated and regimented, and play spaces are the product of adult design (Nabhan & Trimble, 1994, p.11).

David Orr (2002) has articulated that we need to honour children's rights to healthy and sustainable environment, and the opportunity to develop a sense of wonder, through a full scope and range of experiences. But education is embedded within a system that sees children as resources, one of many that contribute to the progress of the economy and the realization of material goals. At the scale of individual schools, adult priorities and the overarching paradigm of capitalism dictate whether or not these rights are acknowledged at all.

**Formal Education- Priorities and Problems**

The goals of formal education fluctuate over time between conservatism (geared toward control and achieving specific curricular ends) and liberalism (leaning more toward student-focused outcomes), often mirroring the larger social atmosphere of the time. Currently, some years into the 21st century, Western nations are engaged in a

globalized capitalist marketplace *while at the same time* attempting to respond to the environmental crisis; which takes precedence in education (Coulter, 2014, p.32)? This represents a conflict of several dualisms- curricular achievements versus student growth, thinking versus doing, and economy versus environment.

Conventional psychological models of childhood development are still rooted in a progress-oriented mindset, best encapsulated by the notion of optimal tendency, the idea that a developing organism will strive to an endpoint of maximum potential (Pentz & Straus, 1998, p.203). The concept of optimal tendency runs rampant in the formal education system. It plays out in the form of top-down reform measures like "No Child Left Behind" (in the United States) and standardized tests that uniformly measure achievement (Williams & Brown, 2012, p.5), and this is because education is now a global competition of rankings, driven by business-like models of efficiency and mechanistic metaphors. Williams and Brown (2012) offer a different metaphor to guide education reform, and that is the living soil (p.13). Instead of racing for the "top", they propose grounding education, literally, in local place and in school gardens.

In contrast to a results-driven system of education, structural-developmental theories (also knows as constructivist or social cognitive) posit that "development is grounded in human knowledge and values, in the active mental life of children as they construct increasingly more adequate ways of understanding their world and of acting upon it" (Kahn, 1999, p.47). These theories are not so focused on the causes of behaviour (whether by internal or external factors) but on how behaviour affects the development of the mind. In relation to values, it is important to vouch for personal experience as contributing to this understanding of the world, by repositioning subjectivity as equally

important to abstract knowledge (Evernden, 1985, p.33). A constructivist education has

several principles that differ from traditional education:

- Instruction is not enough- for students to learn, they must also be active
  participants in the transformation of knowledge through problem solving,
  experimentation, and, of course, mistakes.

- Student interest, rather than reinforcement (positive or negative), shapes behavior
  therefore it should guide curriculum and classroom processes.

- Autonomy, rather than obedience, and cooperation, not coercion, should be
  encouraged. (Kahn, 1999, p.213)

In line with this structural-developmental position, Coulter (2014) also stresses the

importance of giving value to factors like direct experience and collaboration between

teacher and students, because these components of education are not often able to

compete with the current trend of standardization and teaching 'by the book' (p.xv).

However, this scripted method of instructive teaching has resulted in the "de-skilling of

the teaching profession and apathy among students" (Coulter, 2014, p.xv). The current

formal education system's underlying structure, priorities, and instrumental orientation

have presented several problems for the teaching of environmental education.

**Environmental Education**

Environmental education as a pedagogical field has several divergences within it,

concerning its theoretical and methodological position (Gonzalez-Gaudiano, 2006,

p.293). Chawla (1998; 2006) relates the two sides of the field, the scientific/technical and

empathetic/philosophical, to the dual human drives toward rationality and

affiliativeness/emotionality (p.359). These two branches also reflect the fact that

environmental education is subject to the many issues that are part of the formal

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education system as a whole, like the movement towards standardized testing, exemplified by reductionistic, i.e. replicable, results and uniform methods of teaching. The empathetic and philosophical dimensions of human-nature relations do not have a place within the modern psyche, let alone within conventional theories and practice of education.

Although the advances and benefits of modern science are duly noted, Littledyke (2008) also comments that science-based learning and its associated discourse has contributed to a mechanistic and technology-driven approach to solving environmental problems (p.2). As such, it lacks the cognitive and affective elements, and subjectivity, that would contribute to environmental education that engages students. Science is political too, and the meaning attached to the environment, and therefore the actions taken depend on how it is interpreted (Esterberg, 2002, p. 15). This is not to say that science education is without its strengths, but "to recognize that a scientific understanding of nature results in a sort of paradoxical distancing from it is not a denial of the power and insights of science, only an acknowledgement of its necessary limitations" (Kidner, 2001, p.316). Therefore a scientific approach to environmental education must be supplemented by teaching practices that also give value *back* to the environment, and help students relate subjectively by engaging in hands-on experiences and other opportunities that foster a deep sense of environmental literacy.

The tension between standardized education and environmental education plays out in the conception of sustainability in education. Sustainability is generally defined as meeting the needs of the present without jeopardizing those of the future, but from this term emerged sustainable development, popularized in the Brundtland Report of 1987

(Orr, 1992, p.24). Education for sustainable development (ESD) has also emerged in the last decade, but as the United Nations Decade of Sustainable Development (2005-2014) comes to a close, it may be worthwhile to look in other directions (UNESCO, n.d.). The language of sustainability can mask the prioritization of economic needs over social and ecological ones, even though sustainability is supposedly a balance between all three "pillars" (Gonzalez-Gaudiano, 2006; Williams & Brown, 2012). The interdependency of economic, environmental, and social pillars is often framed within the context of human needs, and nature becomes natural resources, which conflicts greatly with a holistic interpretation of sustainability that aims to ensure the well-being of the Earth, comprised of many interconnections (Kopnina, 2012, p.707). Sustainability is now a global goal, supported by the United Nations, schools, and universities, but has become coopted by a capitalist paradigm and instead of questioning and critiquing dominant metaphors, ontological and cultural assumptions, "there remains a lingering tendency to continue to enshrine uniquely modern ways of thinking" (Williams & Brown, 2012). Sustainability, instead of modestly addressing eco-efficiency and environmental management within the context of continued economic growth, *could* focus on democratic participation, ecological and simple design, sense of place, decentralization, human-scale technologies and communities, and the clear recognition of nature's limits (Orr, 1992, p.95).

Between sustainable development, standardized methods, and the predominance of science-based environmental education, it is clear that certain worldviews are constraining and prescribing the methods and content of how environmental education is approached in the classroom. Essentially, environmental education is operating within a particular set of ideological "truths", but it is those truths that have prevented better

environmental care (Gonzalez-Gaudiano, 2006, p.292). Something else is needed that can connect children to the environment in meaningful ways. If 'the environment' is just something we read about in textbooks and are taught to manage using the newest technology, where is the space for connection? Place-based education is one viable approach to education that can bridge the gap between learning and children's lived experience of the environment.

**Place-Based Education- A Look at Living Well**

We must turn to other pedagogical orientations to fulfill education's obligation to today's children, future generations, and the Earth. If, within contemporary education, knowledge is placeless, how are we supposed to know what it means to *live well in a place* (Orr, 1992, p.87)? The process of developing a relationship with local (and global) environments will be strengthened and encouraged if methods and practices of teaching can contextualize children's learning through experience, especially in urban environments with students who do not have a grounded sense of their particular place, or have no history of place to connect with. Research on environmental education programs and outcomes validate some of their benefits, often focusing on increased academic achievement, which has shown to take place in all subject areas, not just the sciences (Williams & Dixon, 2013). That being said, "few studies integrate the deeper values of environmental education with sustainable learning practices. The notion that place itself always forms part of understanding is a concept not typically acknowledged in western models of learning" (Gaylie, 2011, p.16).

Aldo Leopold (1987) and David Sobel (2004; 2010) have both written extensively about place. Leopold's (1987) work *A Sand County Almanac* outlines what is referred to as a land ethic, which has influenced much of place-based education, including David Sobel's work. Leopold's land ethic is derived from an ecology that is grounded in places, and is described as "a limitation on freedom of action in the struggle for existence" (1987, p.202). From a philosophical standpoint, ethics prescribe social from anti-social actions, and in some ways this social and ecological definition harkens to the tragedy of the commons, when people overstep limits in search for personal gain and thereby deplete what is available for all. A land ethic calls for a relation based on obligation (to limit one's freedoms), not economics and privilege, with conservation being a step in this direction (Leopold, 1987, p.203). Ethics recognize that each individual is part of a community, and is therefore part of an interconnected system of relations, a citizen, and "the land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land" (Leopold, 1987, p.204).

Leopold (1987) also comments that obligations "have no meaning without conscience" (p.209), and the conservation movement progressed slowly because it has not moved us internally in our loyalties, affections, and convictions. Therefore a land ethic also implies an ecological conscience, a sense of personal responsibility for the health and welfare of the land. However, education has been moving away from an "intense consciousness of land" (Leopold, 1987, p.223). As noted earlier on, education has become preoccupied with the abstract, and yielding standardized outcomes of student achievement, and even environmental education tends to focus on the natural sciences.

Without direct experience in nature, it is difficult to nourish this attitude toward the land and the larger ecological community.

In reference to the attitudes of European settlers in North America, Smith and Sobel (2010) describe the predominance of a resource-based view of the environment. The land and natural resources were seen as a means to personal wealth and economic opportunity, not a place to lay down roots for new generations (p.37). Neil Evernden (1985) also sees this resourcist view as a contemporary problem, when we see the world through a technological bias in which everything encountered is only seen for its possible usefulness as a "field for the use of tools" (p.67). This constrasts with Barry Lopez's "querencia", which connotes love and deep ties to a place, and a sense of investment in its well-being (cited in Smith & Sobel, 2010, p.37). This idea of investment is mirrored in Smith and Sobel's (2010) conception of place- and community-based education, which gives students the opportunity to become invested in learning because it affords opportunities to improve the places and issues that actually resonate with them.

In a fictionalized scene, David Sobel (2004) paints a picture of a school where students are not in the classroom; they are in the wood lot marking trees, at the urban stream downtown taking samples, writing poems and taking measurements in the school garden (p.1). All of these interesting activities require the presence of natural resources and safe local environments, cooperation from city workers and people from all kinds of occupations in the community, as well as dedication on the part of teachers. This is no easy feat, but it is already happening. For example, in the United States the State Education and Environment Roundtable conducted a study with schools in several states that used the environment as an integrating context. These schools use the nearby

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environment and community as the framework for developing projects and curriculum, instead of trying to fulfill curriculum requirements via environmental education add-ons (Sobel, 2004, p.10). This kind of education improves academic achievement, and proving so is actually a good strategy when lobbying for change (Lieberman & Hoody, 1998, as cited in Sobel, 2004, p. 25). This is in contrast to the predominant system of mandated curriculum requirements and standardized testing which alienates children from place because learning is divorced from the real world (Sobel, 2004, p.5). Learning is typically segregated from a student's life because the demands of graduating high school and college in order to secure valuable jobs has displaced any locally contextualized learning that relates to the lived world of students and teachers (Smith & Sobel, 2010, p.25).

Sobel (2004) articulates a pedagogy of place that emphasizes the interrelations and co-dependency of school, community and environment, saying:

> "place-based education is the process of using the local community and environment as a starting point to teach concepts in language arts, mathematics, social studies, science, and other subjects across the curriculum. Emphasizing hands-on, real-world learning experiences, this approach to education increases academic achievement, helps students develop stronger ties to their community, enhances students' appreciation for the natural world, and creates a heightened commitment to serving as active, contributing citizens. Community vitality and environmental quality are improved through the active engagement of local citizens, community organizations, and environmental resources in the life of the school" (p.7).

Based on evidence collected from more than 100 schools involved with programs run by the Place-Based Education Evaluation Collaborative, 6 major benefits emerged that were associated with place-based learning (Coulter, 2014, p.3). Firstly, it really does help students learn (i.e. does not undermine academic achievement), and students are more

engaged and enthusiastic about school. Students are also invited to become active

citizens, because through first-hand experience students become participants in their local

communities, and are socialized to value civic engagement. Two other benefits described

in the research are: transformation of school culture and environmental stewardship,

which will both be reflected upon in the following chapters.

More recently, Sobel and Smith (2010) have amended place-based education to

include a specific community-based component. Smith and Sobel's (2010)

conceptualization of place- and community-based education is rooted in getting students

active in their community and neighborhood. While this most likely involves

environmental projects, it also involves actions like spending time with seniors and

learning about the community's history, encompassing social and cultural environments,

not just the "green" environment, providing a more balanced orientation to the human-

nature relations (Smith & Sobel, 2010, p.x). The boundaries between the school, its

grounds, and the surrounding community are diffuse, therefore the curriculum and school

design are directed at deepening student connection to local place and community,

because "being rooted has value" (Smith & Sobel, 2010, p.22). Described another way as

urban ecological literacy by Gaylie (2011), place- and community-based learning

necessitates student awareness of their local environments and learning that both

recognizes the needs of local places and also fosters attentiveness, observation,

involvement, equality and respect as the basis of sustainability (p.15).

There are a host of barriers to shifting the pedagogical orientation of formal

education toward place and community-based education. Though it seems attractive at

the outset, concerns and misconceptions can preclude any serious consideration (Smith &

Sobel, 2010, p.ix). Foremost, it cannot be seen as an add-on that must be squeezed into already existing requirements, but an overarching approach to education as a whole. The trend toward restricting children's access to nature means that place-based educational experiences become even more important because, while they are not the same as totally free and unstructured play in wild spaces, they offer sustained and meaningful outdoor experiences (Coulter, 2014, p.10). This potential can be seen if we look more closely at the educational and mental health value of school gardens, which are discussed in later chapters as a potential education and health intervention.

**School Gardens and Therapy Gardens**

Schools gardens have a long history, and though they were recognized for their complex role in children's development at the turn of the 20th century, only recently has there been a resurgence of interest in their potential, partly because of the popularity of urban agriculture and local food security. Practical war gardens were common during both World War I and II, and again during the social movements of the 1960s and 1970s, but faded in the 1980's due to the political and social environment of conservatism (Gaylie, 2011, p.20). Interest has steadily risen since the mid 1990s and through the last decade because of interest in food security, healthy eating, and bringing nature back to schools through environmental education.

Urban school gardens act as a link between theory, practice, and the community. Tangible activities in urban agriculture (like growing food) represent a sustainable practice, one that can expand to involve the local community, while also advocating for cultural changes in how we respond to the environmental crisis. Williams and Brown

(2012) have written extensively about school learning gardens and Koh (2014) notes that the value of their work lies in their theoretical framework, because even though teachers, academics, and community members may be very interested in learning gardens, there is a dearth of work that grounds this learning tool and practice in standards and principles by which to evaluate them (p. 74). Their pedagogical principles aim to foster connection to place, curiosity and wonder, and the value of biodiversity, amongst other things. Many school gardens, designated by that ubiquitous square box, are just as rigid as classrooms, but green spaces should not just be an afterthought, a well-disguised continuation of the status quo that only looks radical because it flowers. In line with the research on place-based education and school gardens, Sampson (2012) predicts that topophilia will be strongest if place bonding is begun at an early age, facilitated by place-based experiences and multisensory learning (p.37). He also suggests that place-based education (conducted regularly in a familiar place as opposed to periodic excursions) will be more effective than other kinds of learning because for most of human evolutionary history, knowledge has been gleaned from being immersed in a local place, a key element of ecopsychology (Samson, 2012, p.38).

Much of the research on school gardens will be discussed in forthcoming chapters in order to illustrate the benefits of naturalized school grounds to school culture, student health and well-being, and place-based learning. But briefly, the results from a meta-analysis spanning 20 years of research on the impacts of garden-based learning have shown that there is an overwhelmingly positive impact on student's grades, knowledge, attitudes and behaviours in both elementary and high school (Williams & Dixon, 2013).

Another branch of garden-based learning that helps contextualize this research occurs in therapy gardens. Horticultural therapists use natural surroundings and experiences to facilitate therapy in a non-threatening way. The non-threatening aspect is worthwhile to highlight, because sometimes therapy or even teaching *can* be threatening or induce anxiety and stress. In the 1800s horticultural therapy began to take form, in facilities where patient involvement with plants shifted from food production on farm-like settings to a more passive form of therapy where nature could be quietly enjoyed in settings designed to be comforting and calming (Davis, 1998, p.3). Relf (1998) proposes a definition of horticulture that integrates plants and people into culture: "horticulture: the art and science of growing flowers, fruits, vegetables, trees, and shrubs resulting in the development of the minds and emotions of individuals, the enrichment of health of communities, and the integration of the 'garden' in the breadth of modern civilization" (p.21). Phrased this way, the "therapy" aspect becomes implicit in the acts of horticulture.

Therapy gardens are generally geared toward children who are at risk, based on risk factors including poverty, family history of psychopathology (especially in parents), physical and sexual abuse, divorce, and serious illness in childhood. Clinical psychiatric diagnoses in children relate to the area of functioning most affected- intellectual, developmental, behavioural, emotional, or physical. Some common childhood psychiatric diagnoses are depression, anxiety disorder, Attention Deficit Hyperactivity Disorder, and Oppositional Defiant Disorder (Pentz & Straus, 1998, p.201). Horticultural therapy with children serves to assist and reinforce normal developmental processes, and also to ameliorate setbacks and abnormalities, through engaging with gardens. Gardening with the assistance of adults allows children an opportunity for cooperation, a sense of

achievement (mastery and self-esteem), and the setting itself provides an engaging place to learn about environmental processes as well as themselves (Pentz & Straus, 1998, p.200).

Though horticultural therapy tends to be aimed at high-risk children who have emotional and behavioural problems, horticultural and eco-therapeutic theories and practice could be integrated into the education system as part of healthy and meaningful development. We will revisit some of the helpful aspects of horticultural therapy when discussing nature integration in the TDSB's new mental health strategy.

**Methodology: Lessons to Learn**

From the above literature review, one very important set of relationships has been identified: place- and community-based education is a pedagogical approach to integrating education and the environment. Moreover, ecopsychology can offer us a way to theoretically integrate the environment and mental health in education. The common link between these two growing fields of study and practice is, obviously, the environment, and therefore provides a conceptual link between education and mental health. This observation is fairly straightforward, but this basic truth of interconnectedness between education, the environment, and mental health has somehow gone unnoticed in education and mental health policies. The literature review has provided the context for coming to understand the value of these relationships, and the following methodology describes how these ideas can be assessed in the research undertaken of school policies focused on environmental education and mental health.

As has been stated, the primary goal of this research is to describe the potential of fostering a more integrated relationship between children, nature, and mental health in a real world-context. What first needs to be done is assess trends in education by performing a discourse analysis of primary documents from the Ontario Ministry of Education (OME), the Ontario EcoSchools programs, and the Toronto District School Board (TDSB). I have intentionally chosen local documents that are fairly recent and accessible because, in accordance with the tenets of place-based education, I believe it is important to start at home, in *my* local places, in order to deepen understanding and create opportunities for growth and change. We are living in a teachable moment with regards to the issues of this paper. The TDSB recently released a four-year Mental Health and Well-Being Strategy, there are over 1,700 EcoSchools in Ontario, and Environmental Education is now provincially mandated. Do these facts represent a fundamental shift in the ideological priorities of formal education, or are they isolated band-aid approaches to merely masking symptoms of a deeper problem?

Beyond the literature review of these topics, this research employs a discourse analysis to help assess the objectives discussed in the Introduction. Discourse generally refers to any talk, writing, signing or, in the Foucauldian conceptualization, ways of talking that create or perpetuate systems of ideology (givens about how the world works). Analysis consists of ways of systematically "taking things apart or looking at them from multiple perspectives or in multiple ways" (Johnstone, 2008, p.29). Discourse analysis combines these two mechanisms into a systematic approach to critical reading that leads to description and critique of the status quo, raising concerns about power, inequality, and ideology. The end goals range from simple description to in-depth critique and

intervention (Johnstone, 2008, p.30). My goals in conducting a discourse analysis are to draw out some of these embedded perspectives and assumptions in policy documents in order to make apparent the ways in which they influence what is and is not considered important in children's education, as they relate to nature and mental health. I consider school gardens and other school ground naturalization efforts specifically, because they represent something that has historically been a fluctuating priority in children's education, that is, connections with nature.

My methodology includes reviewing data, making sense of findings, and organizing them into categories and/or themes that cut across all data sources. This is an inductive process, meaning that it proceeds 'from the bottom up', going back and forth between themes and the data itself and organizing it into "increasingly more abstract units of information" (Creswell, 2009, p. 175). The process of coding involves organizing material into sections of text and categorizing them prior to deeper analysis. The codes used are a mixture of predetermined and emerging ones, based on past literature and broader theories but also those not anticipated that have emerged from the data (Creswell, 2009, p.187). The literature review has begun to highlight some of these. Meanwhile, my discourse analysis of OME, TDSB, and EcoSchools documents helped to construct a list of predetermined codes that, in combination with emergent codes, result in the identification of recurrent themes to be found in Chapter Three. The themes that result from this coding process constitute the main findings of the research. The final step in data analysis is that of making meaning from the data. What was learned? Meaning can be gleaned from comparing the main findings (themes) with information from the literature review. This provides the opportunity to locate changes, opportunities for

divergence, suggestions for amendments and reform, and further questions that need to be asked (Creswell, 2009, p.190).

A methodology comprised of discourse analysis and research findings from disparate fields in the form of a literature review helps address large questions that pertain to social structures and systems (Johnstone, 2008, p.271). Beyond the identification of themes, a discourse analysis of the texts creates the opportunity to add a critical dimension to this work. The Foucauldian use of discourse refers to the dialectical relationships between conventional ways of talking and thinking that form a set of interrelated ideas referred to as ideologies. In this way, a discourse involves beliefs, habitual patterns of thinking and speaking, and holds within it the ideas that create power structures in society (Johnstone, 2008, p.10).

Of particular interest to this research is the idea that discourse is shaped by expectations created by familiar discourse, and new instances of discourse help to shape our expectation of what future discourse will be like and how it should be interpreted (Johnstone, 2008, p.16). Repetition in discourse can cause a rigidity and fixedness in how we talk and think, therefore the larger ideological context is always present. It is so vital to locate these formative ideologies because they colour how new discourse is formed and, in some cases, prevent change and movement forward. I have previously discussed constructivist principles of development and education that focus on the value of subjective personal experience and behaviours as contributing to mental development and learning (Kahn, 1999), and have therefore chosen to apply a constructivist approach to the discourse analysis as well. The primary concern of constructivist approaches is with knowing and being, rather than the specific methods used (Denzin and Lincoln, 1998,

p.235). In order to try to understand and interpret ways of being, the methodology is not rigidly scientific but derivative of the questions that need to be asked. In this case, I would like to know whether underlying ideologies have shaped current policies and practice, thus potentially stalling progress towards more integrated solutions to human and environmental health.

The following chapter includes a detailed explanation of how I located and chose the primary documents for discourse analysis, based on several guiding questions formulated from the three objectives of this research. The seven primary documents that were selected and are described next offer us a way to more deeply ground an analysis of the relation between environmental education and mental health in education generally and Ontario specifically. Based on a discourse analysis of these documents, I will highlight some key recurring themes, critiques, and then in later chapters examine opportunities for better integration in the future.

## Chapter 2- Taking a Closer Look at Discourse in Practice

As discussed in the previous chapter, discourse broadly shapes and sometimes restricts the content and ideas within new instances of discourse, because dominant ideologies, worldviews, and beliefs unconsciously influence how we think and what we even think of. I have selected several primary documents in order to identify how dominant ideas and beliefs about environmental education and mental health have shaped the policies that affect students as well as the Earth itself, within the local context of the TDSB and OME. In searching for primary documents to select and analyze, I used the following guiding questions:

- Are there any references to school ground naturalization?
- Is there any integration of mental health with access to nature?
- What kinds of pedagogical orientation are present?

These guiding questions have been determined based on my three overall objectives of this paper: 1) *Make connections between students' well being and their opportunity to access and engage with natural environments, 2) Integrate school ground naturalization explicitly in the goals of the Toronto District School Board's Mental Health Strategy, and 3) Locate and suggest paradigmatic shifts within the Environmental Education and Mental Health discourse that support an ecologically integrated model of health and well-being.* Seven documents have been selected for further analysis and discussion based on these guidelines and a thorough review of the OME, TDSB, and EcoSchools websites. The documents are categorized below into two sections- 1) environmental education and 2) mental health.

Environmental Education has been steadily growing in both Toronto and Ontario. The OME compiles curriculum guidelines for the whole province, and over the years has been developing ways to integrate Environmental Education into the curriculum, via policy guidelines as well as detailed curriculum. The Ontario EcoSchools program is unique in that it aims to help schools develop environmental practices, and recognizes schools for their efforts through a yearly certification program. It was created by the Toronto District School Board in 2002, but expanded in 2005 to become an Ontario-wide program, with the participation of seven school boards, York University, and the Toronto and Region Conservation Authority (Ontario EcoSchools, 2015). Six documents have been chosen for analysis that pertain to Environmental Education. They are: *Shaping our Schools, Shaping our Future (2007)*, *Acting Today, Shaping Tomorrow (2009)*, Ontario Elementary Environmental Education Curriculum Guidelines *"Scope and Sequence of Expectations" (2011 revised)*, and the Ontario EcoSchools guides on Environmental Literacy, Stewardship, and School Ground Greening.

Mental health is also a priority at both the OME and the TDSB. I have chosen one mental health document for analysis- the Toronto District School Board "Children and Youth Mental Health and Well-Being Strategy" (2013-2017). I have restricted my analysis to this document in particular because it has been designed based on the input of several preceding resources from the Ministry of Education including "Supporting Minds: An Educator's Guide to Promoting Students' Mental Health and Well-being" (2013) and "School Mental Health ASSIST". ASSIST is a provincial body dedicated to helping all Ontario school boards improve student mental health and well-being.

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Through a detailed analysis of these seven documents, important themes and potential connections will be assessed with a goal of suggesting ways of promoting more integration in the future. It is possible to bring together these kinds of policy initiatives to further establish a more ecologically attuned model of education and well-being.

**Environmental Education Documents**

*Shaping our Schools, Shaping our Future (2007)*

Commonly referred to as the Bondar Report, as Roberta Bondar was the Chair of the Working Group on Environmental Education that oversaw publication, *Shaping our Schools, Shaping our Future (2007)* offers recommendations for developing Ontario's environmental policy in the areas of leadership and accountability, curriculum, and teaching/resources. This publication acknowledges that schools are vital in "preparing our young people to take their place as informed, engaged, and empowered citizens" (Ontario, 2007, p.1), but as was mentioned earlier, *how* is this to be done? Part of the reason this document was created was because efforts in environmental education were haphazard and disconnected, lacking a cohesive framework.

*Shaping our Schools, Shaping our Future (2007)* advocates for a comprehensive approach to environmental education, but without grounding it in a theoretical and/or pedagogical model, it remains unfocused except for building curriculum links. However, the Bondar report succeeds in highlighting some basic elements that require attention in order for environmental education to flourish in the future. These include generating leadership within provincial and municipal ministries, creating links to the elementary and secondary curriculums, providing teacher resources and training, and, though it

seems self-explanatory, articulating *explicitly* that environmental education is indeed a priority for schools moving forward.

*Acting Today, Shaping Tomorrow (2009)*

This document was compiled as a follow-up to the recommendations outlined in *Shaping our Schools, Shaping our Future (2007)*, and acknowledges that even though there is no agreed upon universal model for implementing environmental education, the local context is essential for delivering specific outcomes and goals (Ontario, 2009, p.4). This "community-centered context" can be strengthened in the future by explicitly encompassing not just the requirements and needs of individual schools and school boards, but also an overarching pedagogy (theory and methods) of environmental education.

One of my guiding questions for this preliminary analysis is concerned with the integration of mental health with access to nature, and this document displays a promising link between the two in its description of a policy framework: "the policy framework seeks to move beyond a focus on symptoms-air and water pollution, for example- to encompass the underlying causes of environmental stresses, which are rooted in personal and social values and in organizational structures" (Ontario, 2009, p.4). There are parallels between the treatment of environmental issues and mental health- both have surface symptoms as well as root causes linked to social structures, ideologies, and institutions which replicate dominant discourse. Additionally, the overview of environmental education states that "the principles of environmental

education…highlight the importance of a healthy physical environment and supportive social environment for successful learning" (Ontario, 2009, p.10).

*Acting Today, Shaping Tomorrow (2009)* identifies three goals thematized under teaching and learning; student engagement and community connections; and environmental leadership. This policy framework has several strengths, namely that these goals are designed to be measurable in the short- and long-term, and achievable through a variety of strategies. The three goals are used to assess: the current status of environmental education, supports already present that could facilitate implementation, and results achieved (Ontario, 2009, p.22).

The Appendix is well thought out in its categorizations of knowledge, skills, and attitudes that environmental education should promote in students. These desired learning outcomes can be improved upon (and supported) by the inclusion of data and ideas from the research conducted via literature review.


*Ontario Elementary Environmental Education Curriculum Guidelines "Scope and Sequence of Expectations" (2011 revised)*

The OME published an Environmental Education curriculum for Grades 1-8 entitled *"Scope and Sequence of Expectations"* in 2011, superseding those from 2009. It is a tool to help teachers integrate environmental education in all subject areas. The document carefully delineates how specific curricular expectations can be met through the adjunct inclusion of assignments, activities, and prompts that bring the environment into the classroom. The problem with framing Environmental Education as an "add-on" is that it increases the workload of teachers and adds bulk to an already quite hefty curriculum.

For these reasons, place- and community-based education may be a more suitable alternative in the future, because engaging students with local environmental issues, practicing using abstract theories and ideas through action-based projects, and getting outdoors are embedded *within* the curriculum.

*Ontario EcoSchools- Ecological Literacy Resource: "Making Connections: Elementary Learning Activities in, about, and for the Environment"*

This is a compilation of activities intended to assist in the objectives outlined in *Shaping our Schools, Shaping our Future (2007)*, namely imparting students with "the knowledge, skills, perspectives, and practices they need to be environmentally responsible citizens" (EcoSchools, 2011, p.2). Already it can be seen that the EcoSchools publications are designed to fulfill criteria from Ontario's Environmental Education policies but these, as we have seen above, are not necessarily designed for improving students' well-being or health, but mainly in integrating environmental education into the curriculum.

Unlike 2011's "Scope and Sequence of Expectations", the activities contained in *Making Connections* support some integration of child and environmental well-being and they are as follows:

- Provide an opportunity to contribute to the development of our students' ecological literacy as they learn about ecosystems and environmental issues
- Engage students in student-centered cooperative activities
- Encourage students to identify their connections to the earth
- Provide an opportunity for students to go outside
- Solicit cognitive and emotional responses to activities

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- Allow students an opportunity to reflect on their learning through discussion and journal writing

The inclusion of ideas like ecological literacy, connections to the earth, and the explicit goals of getting students engaged in cooperative activities, having opportunities for reflection, and going outside indicate something deeper than simply meeting curriculum requirements, with the occasional reference to the environment. Ecological literacy is specifically mentioned as integral to understanding the relationships between humans and the rest of the world, however it could be grounded in a pedagogical theory, something that is currently lacking in most uses of the term (EcoSchools, 2011, p.3).

It is worthwhile to note that these activities are designed to be applicable from Grades 1 through 8, supporting ample evidence that show the benefits of beginning to form connections with the natural world at an early age. Very young children need natural spaces to engage in imaginative play, practice resilience and restoration, and in later years to form attachments. In one study, younger students retained a sense of connectedness with nature whereas older students did not, leading the authors to suggest that forming attachments to nature is more sustainable before the age of 11 (Lieflander, Frohlich, Bogner, & Schultz, 2013).

Preliminary connections can be made between the specific pedagogy of place- and community-based education and several of the activities outlined in this resource. For example, "Connecting with Habitats" is intended to familiarize students with the concept of habitat and building connections with the class's local habitat (EcoSchools, 2011, p.25-27). "Interpretive Hikes" also offers a starting point for introducing some of the tenets of place-based education as well as help kids get outside (EcoSchools, 2011, p.47).

"Connecting School Issues and Action Opportunities" is an activity that helps us move

beyond fulfilling curricular criteria toward the development of helpful cognitive

structures and action practices. A sense of agency and the ability to engage in proactive

coping are described by Ojala (2012) as helping students combat some of the

hopelessness that comes from learning about the environmental crisis. The activity

implicitly supports the development of critical thinking, creativity, futures thinking, and

agency by explaining the importance of empowering students and helping them learn that

they have the ability to reduce their ecological impacts (EcoSchools, 2011, p.64). The

appendix of Action Projects associated with this activity include many aimed at school

ground naturalization including- naturalizing barren landscapes, creating a learning

schoolyard, creating a pond-based mini habitat, and working on a wildflower community

garden. Of particular interest is one project that brought highschool and elementary

students together to create a "walking school bus" that helped create safe walking routes

to school (EcoSchools, 2011, p.71). In urban contexts, safety is a major roadblock to

outdoor play and exercise (Pyle, 2002).


*Ontario EcoSchools- "Environmental Stewardship Guide"*

This guide is designed to assist teachers and other faculty in getting environmental

education into their schools and really making it work. It is a practical, action-based

resource with step-by-step instructions and tips for implementing EcoSchools goals.

Environmental Stewardship is seen as an important component of reducing the ecological

footprint of people in Canada, and included are examples of fun campaigns the whole

school can participate in such as eliminating bottled water and implementing a composting program.

This is the first instance of a primary document in which I have found direct reference to key authors and their concepts. Aldo Leopold is referenced as the originator of environmental stewardship along with his basic basic definition of "dealing with [human's] relation to land and to the animals and plants which grow upon it" (EcoSchools, 2014, p.2). The *Environmental Stewardship Guide* elaborates further by saying the term has evolved to include, "the responsible care of land and resources, while recognizing that humans are a part of complex natural systems on earth and should embody an ethic of care" (EcoSchools, 2014, p.2). An ethic of care is a great starting point for the integration of mental health and environmental education pedagogy. The guide also indicates that environmental stewardship is beneficial not just for the school's environment (physical and other), but also gives students the chance to use their skills and knowledge in an action-based context, "preparing them to become active and engaged citizens" (EcoSchools, 2014, p.2). This idea will be further explored in Chapter 3. This combination of learning-plus-action is repeated again as the main tip for successful stewardship campaigns.

*Ontario EcoSchools- "School Ground Greening Guide"*

Similar to the previous guide, the *School Ground Greening Guide* offers practical examples and instructions on how to actually implement environmentally friendly amendments to a school.

This guide is designed as a partial solution to a specific health issue, that of ultraviolet radiation (UVR) exposure and radiation in childhood. The whole guide is formulated with the goal of creating shade, but the role of trees in minimizing climate change and facilitating energy conservation are also discussed (EcoSchools, 2010-2011, p.5). I highlight this because it suggests that a nature-based action can be proposed as an intervention that targets a health concern, and this model could be applied to other health issues as well. Safety, as will be discussed further in the next chapter, is a recurrent motif in the Health and Physical Education curriculum guidelines of Ontario. But why else do children need trees, aside from the shade they offer? The guide does acknowledge the special role of trees for children, as they have "many positive effects on children's health and behavior and can foster children's awareness of their connection to the natural world" (EcoSchools, 2010-2011, p.2). But this is not enough to warrant the planting of trees. Safety, however, is a much more salient topic, UVR radiation is a provable biomedical hazard to children's health, and is therefore a good justification for planting trees.

Together, these six documents cover a spectrum of ways to enact environmental education, from top-down policy reform to starting, literally, at the grass and roots with environmental action projects. They demonstrate that environmental education, as conceived by both the OME and the TDSB, is comprised of knowledge as well as action, and has an array of benefits for both students as well as the school's natural environment. I believe it is vital to consider the positive effects on the natural environment that result from projects such as planting trees, eliminating bottled water, and introducing

composting systems to reduce waste. However, we must not neglect the potential effects of environmental education on mental health and general performance at school. Mental health is of great concern to educational institutions including the TDSB, so we now turn to a recent policy document that examines mental health at school, before delving into a discussion of environmental education and mental health in tandem.

**Mental Health Document**

*Children and Youth Mental Health and Well-Being: Strategic Plan (2013-2017)*

The TDSB is addressing mental health in elementary school, stating that it is a priority given that one in five Ontario students has a mental health problem (TDSB, 2014, p.3). The TDSB cites the World Health Organization definition of mental health as the ideal for which they strive, which is "a state of well-being in which every individual realizes his or her potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community" (cited by WHO in TDSB, 2014, p.3). A 2012 survey of elementary and secondary schools in Toronto reported that anxiety and depression were primary concerns in terms of students' emotional well-being, and that academic achievement is very important to well-being at school.

A four-year strategic plan was recently launched by the TDSB for the years 2013-2017 in order to affirm the importance of mental health and well-being, as they are "essential to student success and achievement" (TDSB, 2014, p.1). Student success is mentioned quite frequently throughout the document, but it is unclear whether this refers solely to academic achievement or is implied to be more holistic. More clear is the

implication of "well-being" which is described, on a continuum model of mental health and illness, as including: healthy moods, ability to function and reach one's full potential, and resiliency factors such as secure attachments. Here we already see an opportunity for the integration of nature and mental health, as access to nature has repeatedly been highlighted as a positive factor in child development (Gruenewald, 2003). Resiliency is repeated several times throughout, as is the theme of creating a school *culture* where mental health is integrated into "every aspect of every student's school experience" (TDSB, 2014, p.4), very similar to the way environmental education is supposedly embedded within every class and each student's learning.

There are underlying similarities in the ideals of the TDSB Mental Health Strategy and the goals of environmental education in Ontario. Both environmental education (and nature time) and mental health integration are connected to student achievement, and both involve collaboration between schools and communities. Instead of having to rely so heavily on person-centered services from professional support staff (TDSB, 2014, p.7-8), the natural environment could be viewed as one of many available resources to be used in the prioritization of mental health at school and as a mental health intervention.

It is understandable that many of the proposed goals and steps in the Strategy are reactive, because mental health and well-being has been identified as a problem that needs to be improved upon, but it is *also* an opportunity to put in place preventive supports to help young children develop good health (resilience, for example) and avoid some of the problems of their older cohorts, such as high anxiety and depression. This is referred to in the strategy as "intentional prevention and intervention" (TDSB, 2014,

p.10). It is important to promote mental health as well as intervene early and respond to children and youth currently experiencing mental health problems.

There are four components of the Mental Health Strategy:

- High quality services and programs
- A caring school culture and healthy physical environment
- A supportive social environment
- Parent and community partnerships

In the following two chapters, I will describe how all of these components can be facilitated by the integration of mental health with nature. For example, services and programs can take lessons from ecotherapy and be conducted in natural settings, school culture and physical environment can be improved by policies that merge the well-being of both students and nature, time in nature has an array of positive effects on student behaviour (therefore creating a better social environment), and the community can be integrated through the tenets of place- and community-based education.

There are clearly many points of crossover between the topics of mental health and environmental education, but they are categorically separated in the literature. Recall that Huesemann and Huesemann (2011) posit that in order to effectively address the environmental crisis, which is, at its core, a human crisis as well, we need a worldview based on inclusivity, not separation. In the following chapter, the key themes identified from the seven documents described above will be shown to contain within them the opportunity for creating bridges that support an inclusive worldview. In the field of

education, this worldview will show itself through policies and practices designed to improve both student health and well-being as well as ecological health and well-being.

## Chapter 3- Undercurrents of Change, Rising to the Surface

The present chapter presents the main findings of the discourse analysis, providing key information that can be used to critique policies of the OME and the TDSB, for the purposes of locating opportunities for change and divergence, providing suggestions for amendments and reforms, and delineating questions for future research (Creswell, 2009, p.190). The main findings that have been thematized into categories are as follows: literacy, stewardship, school ground naturalization, safety, resiliency, and school culture and pedagogy (for full documentation of the coding process used to inform these findings, see Appendix). The literature review from Chapter 1 combined with other studies from education, psychology, and social work will help to ground these themes in research that advocates for changes in dominant worldviews and educational philosophy, as seen in ecopsychology and place/community-based education. As we will see, these themes indicate that policymakers and educators in Toronto and Ontario are moving forward in a direction that supports the integration of mental health, nature, and education, though there are gaps and spaces for improvement.

All of the primary documents reviewed are fairly recent, therefore they represent new instances of discourse. They contain within them a glimpse of what future discourse will be like, because they play a role in shaping what is to come. If these themes can become stronger, grounded in theories that support the integration of human and ecological health, and applied to policy-based goals that advocate for the inclusion of nature in children's education, I believe it is possible for paradigm shifts to occur that support a holistic approach to healthy and sustainable futures.

*1) Safety*

The EcoSchools "School Ground Greening" guide frames tree planting as a health and safety intervention for providing shade and reducing UVR exposure (EcoSchools, 2010-2011, p.5). This prioritization of health and safety is reflected in the research, as Bell and Dyment (2008) note that, "when designing and implementing green school grounds, the most frequently considered health concerns are often the immediate physical ones, such as providing sun protection" (p. 79). Safety is also recurrent in the Health and Physical Education curriculum components mentioned within the Ontario Environmental Education "Scope and Sequence of Expectations" (2011). Safety is one of the subject's expectations in Grades 1 through 8, with goals such as- identifying environmental factors that pose safety risks (such as extreme heat, sun exposure, and extreme cold), identifying unhealthy habits and behaviours, and injury prevention.  Learning how to take precautions and preventive measures is an important part of preventing outdoor injuries and staying healthy, therefore it is beneficial to include curricular components specifically geared towards safety.

However, it should be stressed that a heightened concern with safety has two drawbacks: (1) policies may overtly prohibit outdoor play in nature due to worries about safety, and (2) the general environmental safety may be compromised beyond the school grounds, making outdoor time at school all the more important. David Sobel articulates how some nature-based activities can seem stifling to children, with too many rules and not enough leeway to just play (Orion, 2012). Environmental education can be complicit in over-structuring children's experiences with nature, along with urbanization, fear of illnesses and getting hurt, and using the "look, but don't touch" mentality (Sobel, 2012; Bell & Dyment, 2008; Pyle, 2002). Sobel astutely notes that children get many injuries

playing competitive sports, but it is tree climbing that becomes outlawed because the perceived benefits outweigh the risks in one case but not the other. Bell and Dyment (2008) also raise the question of which constitutes a greater risk- children succumbing to scrapes and bruises, or being denied experiences that foster full development (p.80).

With regards to the second drawback, school grounds become even more important when we realize that sometimes they are the only places where safe outdoor play can be had. Rivkin (1997) paints a picture of reduced safety in urban neighborhoods that detracts from children's desire to play outside- "conditions such as homelessness, crime, substance abuse, and the proliferation of guns make being outside riskier…vacant lots now also have the detritus of our times, such as broken glass, old tires, and endless plastic and cardboard packagings" (p. 61). Environmental inequality research also draws attention to the disproportionate concentrations of toxicity and pollution in low-income and minority neighborhoods (Strife & Downey, 2009, p.102). Therefore it is of paramount importance that schools, where children spend a good part of the day, be safe places, but also that they take on the functional role once provided by vacant lots and green spots in the neighborhood.

Teachers have noted that one negative effect of less visible play spaces and school gardens is the concern with safety, which makes them seem less appealing and too difficult to implement effectively (Gaylie, 2011; Nedovic & Morrissey, 2013). Sometimes there are simple solutions to the problem, such as placing mirrors in key areas to improve children's visibility, but part of the fun of spaces with trees, stumps, gardens and rocks is the many opportunities for hiding, climbing, and exploring. Diversely organic play areas are much preferred by children (Malone & Tranter, 2003), therefore

concerns about safety should not be the only reason to restrict outdoor play in nature or the naturalization of school grounds.

One benefit of the EcoSchools "School Ground Greening" guide is that it *does* present trees as a part of safety as opposed to its nemesis, by using school ground naturalization as a health intervention. What if the discourse of health were expanded to include mental health? Trees assist physical health by providing shade, but numerous studies have shown that spending time outside, or even just seeing trees through the window, has positive effects on affect, behaviour, mood, and even recovery from illness (Chalquist, 2009, p.1). The TDSB *Mental Health Strategy* cites the growing rate of depression in adolescents on its first page. Acute mental and cognitive disorders could be tied to lack of physical activity and time in nature, supported by studies that correlate access to nature with improved motor and cognitive functioning (Strife & Downey, 2009, p.105). Naturalized spaces can also help increase concentration and focus in children with ADHD, suggesting a restorative aspect of nature. Another way nature, and green school grounds in particular, can protect against acute mental health problems like depression is in the way they afford opportunities for positive and cooperative social interactions, reducing bullying and violent behaviour.

A concern for safety has implications for whether school ground naturalization projects are undertaken, supported, and constructed with students preferences in mind. An attitude of fear towards nature can also impede environmental stewardship and place- and community-based learning if the surrounding environment is extremely unsafe. Therefore school ground planners and school boards interested in school ground naturalization must think carefully about issues of safety. Maller (2009) comments, "if

schools do not have 'green' grounds, or the school philosophy does not value the environment, many children who live in urban areas may have limited opportunities to experience nature and may miss out on the potential benefits" (p.538), meaning the school itself and the surrounding environment are an important variable in ensuring adequate access, and moreover *safe* access, to nature.

*2) Literacy*

The Appendix of *Acting Today, Shaping Tomorrow (2009)* outlines the knowledge, skills, and attitudes to be developed via environmental education. The breakdown of goals into these three categories suggests that rote information is not enough, that it is also necessary to foster a particular point of view towards the environment in order to promote its welfare. This resonates with the idea of environmental literacy put forth in the Introduction of this paper, suggesting that literacy involves more than knowledge, encompassing a deeper resonance with place, as well as care and respect for the environment (Gruenewald, 2003). Cole (2007) has also noted that critical perspectives need to be included by educators so that environmental literacy refrains from simply reproducing dominant discourse and gets students to questions issues of race, class, and history (p.42).

The first goal of *Acting Today, Shaping Tomorrow (2009)*, knowledge, can be fulfilled largely through curricular integration in the social and technical sciences. Some of the learning goals include- knowledge of Earth's resources, ecosystems, human societies, urbanization and deruralization, and current national and international environmental efforts (Ontario, 2009, p.26). Therefore, the *Environmental Education*

*Curriculum guidelines (2011)* are well suited to fulfill the knowledge requirements of environmental literacy.

Skills and attitudes are much more challenging to teach, for they often arise via direct and sustained experiences with nature (Heerwagen & Orians, 2002). Some of the skills included in the *Acting Today, Shaping Tomorrow (2009)* Appendix are: defining fundamental concepts, develop problem-solving skills and critical and creative thinking skills, and working towards negotiated consensus amidst differing opinions (Ontario, 2009, p.27). Several of these skills are related to knowledge (such as being able to define a concept), but the research shows that some skills and attitudes are most likely to develop when children get frequent contact with nature. Children tend to develop skills and knowledge in structured activities, but value the freedom and creativity of unstructured play as well, meaning unstructured learning has some value as it affords the opportunity to think creatively and cooperate (Maller, 2009, p.528). Unstructured learning also provides the opportunity to develop an affective attitude of connection with nature, which increases the likelihood of pro-environmental actions (Cheng & Monroe, 2012, p.43). The affective attitude of connection is comprised of enjoyment of nature, empathy for creatures, sense of oneness, and a sense of responsibility (Cheng & Monroe, 2012, p.43). The attitudes listed in the Appendix reflect some of these factors as well as others and include: appreciation for the resilience, fragility, and beauty of nature, appreciate the role of human ingenuity in ensuring sustainable progress, be mindful of other perspectives (e.g. First Nations), and maintaining hope and a positive perspective on the future (Ontario, 2009, p.27).

In terms of the attitudes related to maintaining hope for the future and appreciating human ingenuity, there is a body of literature that has documented children's concerns at different ages and the environment is a consistent thread that runs throughout (Hicks & Holden, 2007). Based on 50 in-depth interviews with urban children aged 10-12, one study attempted to gain some insight from the child's point of view (Strife, 2012). The majority of children interviewed expressed sadness and anger, as well as apocalyptic and pessimistic thoughts about the future of the planet (Strife, 2012, p. 37). In Gaylie's case studies (2011), she found that many students, in their writing, talked about fears they had in their daily lives and the fear for nature's well-being, with one student writing an ode to the wolf, hoping it did not become extinct (p.166). A sense of helplessness can be a huge barrier to willingness to act, coupled with frustration that these problems are out of their hands. Uncertainty about the future can also impede and stifle creativity (Feral, 1998: Sandri, 2013).

Using a questionnaire about coping mechanisms and the positive emotion of hope, Ojala (2012) found that pessimism and hopelessness are common in adolescents and young adults, whereas young children place their faith in research and technology (p.550). In Ojala's (2012) discussion of coping, proactive coping is described as being future-oriented, tackling how to build resources and promote active, creative solutions to future problems (p.553). It may be valuable for educators to try and facilitate proactive coping through finding meaning, exploring problems, and talking about students' feelings so that distancing coping mechanisms are overcome, as distancing can be a precursor to disengagement.

The EcoSchools "Ecological Literacy" guide helps put the knowledge, skills, and attitudes outlined in *Acting Today, Shaping Tomorrow (2009)* into practice, with reference to a specific all-encompassing concept: ecological literacy. The EcoSchools guide identifies the relationships between humans and the natural world as the foundation of ecological literacy, facilitated through both classroom learning as well as active participation geared to get students involved in exploring the impacts of their choices on the environment (through energy, waste, and other pertinent issues). This guide sections ecological literacy into two components; 1) inquiry allows students to learn about human-nature interdependence; and 2) literacy implies a step forward to how we may care for the Earth (EcoSchools, 2011, p.3). By breaking ecological literacy into two components, the "Ecological Literacy" guide supports the contention that to be literate involves more than being able to read a text, and also integrates the three goals of *Acting Today, Shaping Tomorrow (2009)*- the first goal of knowledge can be achieved through inquiry, and skills and attitudes through a deep sense of literacy facilitated by active participation. Environmental literacy, if conceptualized as including knowledge, skills, and attitudes, may emerge as a prerequisite for environmental stewardship.

The importance of these findings is that school-based activities can help children cope with environmental issues in positive ways by giving them problems to fix and placing trust in their school as an agent in fighting climate change and other environmental problems by taking action right at home. Distant and very complex problems can be overwhelming, whereas making changes at the school or community level help prevent distancing or ecophobia because "children may feel better about the state of the environment if they are given more opportunities to engage and participate in

environmental stewardship and civic responsibility" (Strife, 2012, p.50). Stewardship will be discussed next, as it provides a conceptual basis for applying ecological literacy and further developing knowledge, skills, and attitudes by tackling hands-on projects and spending time in nature.

*3) Stewardship*

It is clear that there are already many parallels between the foundations and components of environmental literacy and environmental stewardship. The EcoSchools "Environmental Stewardship" guide is based on action. It draws attention to Canada's ecological footprint per person, describing environmental stewardship as making individual behavioural changes that reduce one's footprint, but it also involves Aldo Leopold's stipulation of "responsible care of land and resources" (EcoSchools, 2014, p.2). An ethic of care with regard to stewardship is necessary because we have to care about something before we choose to act for its well-being, and this includes people as well as places. Caring for nature includes conceptual understanding, respect, motivation, and the skills necessary for action (Kentish, 2008, p.80). These components are clearly mirrored in the requisite knowledge, skills, and attitudes that comprise ecological literacy, discussed above as being a precursor to stewardship.

A sense of care can only be fostered through experience, representing a shift in the relative importance of reading and writing at school versus *doing.* Rote information transfer teaches students to be "passive recipients" (Williams & Brown, 2012, p.127) and is emblematic of an orientation where direct experience is mediated by technology, unstructured play is prohibited out of fear, hands-on work is trivialized and devalued, and variety is replaced by homogeneity. Williams and Brown (2012) stress the value of

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learning by doing, in place, over time, as the requirement for developing human-nature connection, but they also note that not *everything* must be learned through first-hand experience (or action) because collective knowledge is important too (p.127). In a study designed to investigate care toward the environment, children were engaged in a project where they were tasked with taking care of a plant (Mortari, 2004). They first assisted with the planning phase and then cared for their plants in the greenhouse for three months. Before beginning, students were asked about care and none of them included plants within the realm of things they thought needed caretaking (Mortari, 2004, p.115). However, by the end of the program these feelings had changed dramatically, via the intervention process of a concrete experience combined with reflecting and writing about it. If educators are to help students become environmental stewards, moral responsibility needs to be expanded to include all living things.

While care is certainly one of the factors that leads to environmental stewardship, there are other means by which a sense of responsibility for the earth can arise. Collado and Corraliza (2015) draw attention to restoration as a motivational factor for prompting pro-environmental behaviour. They posit that restorative experiences in nature enhance attitudes and behaviours because people feel the desire to protect the environment that they derive this experience from (p.39). Restorative experiences are the "renewal of resources (physical, psychological, and social) that have been depleted in meeting the demands of everyday life" (Collado & Corraliza, 2015, p.40). This relates to mental health as well, because the natural environment offers a setting that seems to help us regulate ourselves, strengthening the argument that children should have access to nature during the school day, through the use of naturalized school grounds or a school garden,

if not for the well-being of the environment then at least for their *own* well-being. Children may then come to value these settings because of the positive effects they confer.

The EcoShools "Making Connections: Ecological Literacy" guide speaks of "empowering students to make change" (EcoSchools, 2011, p.64) through activities that connect school issues with action opportunities. Empowerment needs to fostered by first attending to barriers that prevent action, so that steps can be taken that help reinforce a positive vision of the future (Hicks & Holden, 2007, p.509). The studies described in the above section on literacy show that many of these barriers, like being cognitively overwhelmed by information, or overcome emotionally with fear or hopelessness, can be combatted through developing the knowledge, skills, and attitudes mentioned. Caring for the environment by participating in action projects at school and in the surrounding community aids in the development of traits that also bode well for mental health. Environmental actions give students the chance to develop active citizenship skills (EcoSchools, 2011, p.7), but there are many other reasons why providing opportunities for environmental action are important.  The feeling of having the ability to make change through hands-on involvement in school-based or community-based activities (some suggestions from the EcoSchools Stewardship Guide include going bottled water-free and building a compost system) translates into an increased sense of competence. A sense of competence (also referred to as self-efficacy) means that you believe you can achieve success in the things that are important to you, and therefore contributes to a strong sense of self-worth (Chawla & Cushing, 2007, p.445).

Stewardship is important for both student's development of competence and participation in pro-environmental behaviours, but it also helps us heal- "through our bonding to a portion of the earth and by attempting to heal it through direct action, we can heal ourselves" (Hay, 2005, p.321). The sense of care implicit in acts of stewardship marks it as an ethical approach to living in general, so that children grow up to be kind and appreciative of the value of the natural world. If students can learn to care deeply for a plant, they will also be practicing the requisite skills to care for other humans, like their peers. In a study by Feral (1998), an ecopsychological summer program for at risk youth found that, by conducting therapy in nature and emphasizing finding connectedness, the participants experienced increased self-esteem, and were kinder and more empathetic toward their peers, as a function of increased sense of competence (p. 262). A greater sense of competence and self-efficacy can also reduce criteria for depression (Feral, 1998, p.264). A sense of competence is also one of the protective factors contributing to resiliency, which also emerged as a theme in the discourse analysis and will be discussed presently.

*4) Resilience*

Resilience is mentioned on more than five pages of the TDSB Mental Health Strategy, in relation to well-being. It is also identified as one of several areas that requires the development of shared understanding and language, along with terms like wellness, mental health continuum, tiered approach, early intervention, prevention, and social determinants of health (TDSB, 2014, p.14). Resilience can be defined as the "capacity to overcome challenging stressors… to become competent, confident and caring individuals" (Chawla et al., 2014, p.2). Resilience is thought to emerge through the

formation of protective factors like supportive relationships and the feeling of competence, both of which can be facilitated through experiences with nature and involvement in environmental stewardship projects. Therefore, there is an implicit connection between the TDSB's goal to impart resilience in students, green school grounds, and environmental education that involves knowledge and action.

School grounds with "green" features reduce stress and promote resilience. The presence of trees, gardens, outdoor classrooms, and wooded areas can be viewed as an intervention for stress management and the development of healthy coping mechanisms. Nedovic and Morrissey (2013) discuss the concept of "affordances" as one way of explaining why children prefer and benefit more from playing in natural and wild spaces- the environment has a functional role in that it provides, or *affords*, the opportunity for psychological benefits like resilience to come about (p.283). Affordances provide opportunities for functional actions (like climbing, digging, jumping, etc.) as well as psychological behaviours and a wide variety of emotions, both positive and negative (like satisfaction, excitement, or fear) (Brymer, Davids, & Mallabon, 2014, p.192). For example, climbing a hill may help with motor development and agility but also elicit wonder, awe, and excitement.

Through observation and interviews, Chawla and colleagues were able to get a sense of how children feel about naturalized spaces at school, whether that be through their actions (voluntarily choosing natural play areas), or their words (speaking of peace and calm, and being able to focus better) (Chawla et al., 2014, p.10). Even though the study could not prove that students were becoming more resilient, as this would necessitate a longitudinal study, nature functioned as a protective factor, creating conditions for

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reducing risk, building assets, and mobilizing cognitive systems (Chawla et al., 2014, p.11). Other studies have found relationships between nature, stress, and attention, supporting the qualitative evidence in Chawla and colleagues' study about children's perceptions of their school grounds. Wells and Evans (2003) found that nearby nature can buffer against stressors thereby contributing to resilience- parents and children both reported improvements in psychological distress and self-worth measures and the effects were greatest in those who were most at risk (p.321). Time spent in nature has also be correlated with attention restoration, because temporarily focusing on things that draw one's attention and that elicit fascination can restore other cognitive capacities (Wells & Evans, 2003, p.325). According to attention restoration theory, heightened fascination within natural environments can help restore attention as well as improve affect, and therefore helps explain some of the mechanisms that connect nature to well-being (Sato & Conner, 2013, p.198).

From the above research, it is clear that resilience can develop even without the provision of mental health services and support staff. If the TDSB Mental Health Strategy were to explicitly delineate mental health goals based on the development of naturalized school grounds and opportunities to engage in the outdoors regularly, this would be a great step forward in the integration of children's well-being with the natural environment. The problem is that the Mental Health Strategy does not at any point reference the natural environment, only the environment of the school generally, so this would need to be much clearer in the future. This is a problem within the discourse generally, as sometimes "environment" and "ecology" do not actually refer to the natural environment or the patterns of interrelation in nature. For example, an article by Atkins et

al. (2010) causes some confusion because it refers to the school's ecology and naturalistice resources, but in this case these terms simply mean the built, social, and interactive structures that influence students' experience within the school (p.42). As will be seen with the next theme, school ground naturalization is encouraged elsewhere, so an opportunity is missed in keeping nature absent in the Mental Health Strategy.

*5) School Ground Naturalization*

Some examples of successful action projects from the EcoSchools "Environmental Stewardship" guide involve school ground naturalization projects including creating a pond, school garden, and planting trees. Through these kinds of experiences, "students learn that barren patches of pavement can be successfully transformed into diverse and welcoming places [and] that they have a right to participate in decisions that affect their quality of life" (Bell & Dyment, 2008, p. 85). In essence, students are actively participating as environment citizens and stewards.

In other documents including *Acting Today, Shaping Tomorrow (2009)* and the Ontario Environmental Education curriculum guidelines, it is simply implied that there will be some kind of "nature" somewhere to provide the setting for these experiences to occur. The TDSB Mental Health Strategy also fails to include the *natural* environment as part of the school environment. But a school's ecology is more than a building and its resources; it also includes the grounds surrounding the school. The natural environment and the kind of learning that nourishes physical and mental well-being, and approaches that foster improved functioning rather than symptom reduction, should not be overlooked when investigating mental health reform. For example, as far back as 1997, a school in California that naturalized its grounds reported that children had more positive

social relationships and more creative play, suggesting a positive social-emotional developmental effect (Rivkin, 1997, p. 63). Naturalization projects included tree planting, creating habitats for indigenous flora and fauna, and school gardens.

Children should be involved in the planning and creation of school ground naturalization projects if possible, fostering a sense of responsibility (akin to the intended goals of environmental stewardship). Even young children's preferences can be included through drawing exercises and interviews (Nedovic & Morrissey, 2013). It is important to plan school ground naturalization projects properly, so that they become success stories rather than a drain of time and money. Evidence shows that greening projects should improve the natural ecology, cater to children's developmental needs, and include input from students as well as staff. Therefore the EcoSchools "School Ground Greening" guide, which is currently for the purposes of designing spaces for shade and energy conservation, could benefit from expanding on the "special role of trees" (EcoSchools, 2010-2011, p.2) for children's awareness and connection to the natural world, and positive effects on health and behaviour.

School ground naturalization projects have been discussed above with regards to stewardship projects that focus more on development of skills and student empowerment, but it is important to remember that these naturalized spaces are also to be enjoyed. Nedovic and Morrissey (2013) found that children and their teachers all thought that an ideal garden would be diversely organic, which is important because few studies have found teachers to have this preference (p. 289). The kindergarteners in this study had more complex and sustained creative play in their new garden, even without other props and toys, and they were more physically active. The new garden also had a soothing

effect- "children's play was calmer, and they were less likely to become agitated or distressed" (Nedovic & Morrissey, 2013, p. 290). It is also amazing that a natural landscape allowed children to slow down and focus, and engage in "respectful, quiet and caring communications" (Nedovic & Morrissey, 2013, p.290). Similar studies have found that students are happy in their gardens, voice more pride in their school, and demonstrate increased self-esteem (Blair, 2009).

Green school grounds have also been correlated with increased outdoor recess time (Arbogast, Kane, Kirwan, & Hertel, 2009). The number of trees on school grounds, the size of the grounds, and sports fields all provide space for both structured and unstructured outdoor play but without these features recess can be restricted to asphalt and playground equipment (which are less appealing), or be eliminated altogether. Recess is an important part of the school day though, because it provides a break from schoolwork, an outlet for stress and anxiety, and sometimes even much needed reprieve from classmates (Arbogast et al., 2009, p.451).

A great number of the desired outcomes of the TDSB Mental Health Strategy can be facilitated by school ground naturalization projects and experiences with nature in a more general sense. The Mental Health Strategy espouses a person-centered view of services, mainly in support staff, and the creation of Mental Health and Well-Being Teams (TDSB, 2014, p.9). The inclusion of green spaces, allotting time specifically for unstructured play and reflection, and a variety of other nature-oriented interventions would still require staff and faculty support, but even the mere presence of trees can help with mood and affect (Frumkin, 2012). The main indicators of well-being on the mental health spectrum illustrated in the Mental Health Strategy are healthy moods, the ability to function and

reach one's full potential, and resiliency factors such as secure attachments (TDSB, 2014, p.2). These can be achieved (partially) through the inclusion of nature in a student's life, but how could this integration occur?

Recalling the discussion of affordances (aspects of the natural environment that allow for hands-on, behavioural, and emotional opportunities), school gardens clearly afford many opportunities. Laaksoharju, Rappe, and Kaivola (2012) found that these affordances arise from the landscape scheme (the arrangement of features like trees, paths, and water), the amount of biodiversity, and engaging in acts like gardening (p.199). The EcoSchools "Grounds Greening" guide already includes many helpful tips for planning the layout of trees for optimal shade, so this can be expanded to include opportunities for play and other activities as well.

Counselors can use ecotherapy as a way to bridge therapeutic goals with time spent in nature (Sackett, 2010). The inclusion of practices based on horticultural therapy could also assist in integrating the discourse of mental health with the natural environment. Some treatment goals of horticultural therapy with children are: development of social skills and interpersonal relationships, increasing self-esteem and self-confidence, mastery of a skill to enhance sense of control and ability, and development of prevocational skills (like staying on task, accepting feedback, and following directions) (Pentz & Straus, 1998, p.218). These goals are, at the core, aimed at aiding full personal development. One creative way to connect counseling with the outdoors is a "structured recess" program, where students with behavioural referrals are helped to play together and practice calmness by walking around with the counselor (Flom, Johnson, Hubbard, & Reidt, 2011, p.127).

Counselors already attend to social and emotional deficits, but can use the school grounds to augment their practice. The TDSB Mental Health Strategy is primed to include these kinds of activities because it already includes a component dedicated to enhancing a healthy physical environment. At the moment, suggestions for achieving this component are limited to establishing an area for students to participate in physical activity and clubs, developing a library resource section with materials about mental health, and establishing school health/lifestyle centres (TDSB, 2014). The *natural* physical environment is conspicuously missing, but there are myriad ways to address this component via school ground naturalization.

Ozer conceptualizes school gardens through a model of health promotion and intervention (2007, p.846). In some ways school gardens already act as a health intervention, by encouraging students to grow and eat produce right on school property and learn about healthy eating choices via direct experience. However there is untapped potential for school gardens to influence other emotional and social aspects of health. Ozer defines two main elements of this potential: promoting the health and well-being of individual students in multiple areas of functioning, and strengthening the school environment as a setting for positive youth development (p.847). These two elements essentially encapsulate the goals of the TDSB Mental Health Strategy- to improve mental health by targeting individuals as well as the school as a whole system. The only problem is that school gardens, nature, and all the variants upon these terms, are nowhere to be found in the Strategy. However, if nature can be brought into education at the level of discourse, which structures and dictates what we think about and how we think, it will

ripple through to the level of policy and practice. The following theme will illustrate how these undercurrents of change are rising to the surface.

*6) School Culture and Pedagogy*

*A) Culture*

The Mental Health Strategy refers several times to a school's "culture", and the ways by which certain policies and goals are meant to reflect the school as a whole, stating that its vision is "a culture where mental health and well-being is integrated into every aspect of every student's school experience" (TDSB, 2014, p.2). The school is one of many environments in a child's life, and it can be difficult for educators to attend to the social, cognitive, and emotional needs of students, especially because the emotional growth of students is "usually seen as tangential rather than core to the function of schools" (Atkins et al., 2010, p. 3). The TDSB has taken a great step forward by stating that these aforementioned needs are just as important as academic achievement, which, incidentally, is also bolstered by strong mental health.

In studying children's cognitive development in relation to their school ground play experiences, Malone and Tranter (2003) found that play behaviours that involved interacting with the natural environment were dominant is some schools but lacking in others (p. 284). Of the 5 schools in their study, only 1 had significant observations of interacting with and exploring the environment (p. 292). This school's students were also the only ones to list the school's green spaces as their favourite, and felt they got to go outside enough. The variation in responses reflects how the school, as a whole, can influence the kind of experience students have on the premises. Children learn, through how much attention adults pay to the school's grounds, whether or not it is valued and

important (Upitis, Hughes, & Peterson, 2013, p.101). This idea is supported by Chawla's research (2007) which shows that adults who are environmentally attuned and care strongly for the well-being of the environment often had positive childhood experiences in nature with role models who *showed* them how important the environment is (p.144).

School gardens can strengthen the school environment and culture because they influence the norms of the school (Ozer, 2007, p.856) and reinforce some of the lessons and value of connectedness, stewardship, and cooperation that are practiced in the garden. School-wide events and greening campaigns like those mentioned in the EcoSchools documents, such as celebrating Earth Day or having a School Garden Club, can meaningfully add to reinforce these values as well. Ozer (2007) comments that, "outcomes that depend on changes in health and social behavior – beyond gains in knowledge – are certainly more challenging to achieve" (p.859). Unless the vast majority of students are participating in their school's environmental projects and naturalized settings on a regular basis, it is unlikely that significant changes will occur. Therefore it is important to try and engage the whole school, along with students' families and the surrounding communities, for optimal benefits that extend beyond any individual change but actually reflect a positive school environment.

*B) Pedagogy*

The educational philosophy (i.e. the pedagogy used within the school's outdoor programs) also has an effect on the efficacy of school grounds as a site for teaching and learning. Koh (2014) observes that even though there is growing interest in school gardens, writings that provide a cohesive theoretical framework are missing. Localization and place-based education are referenced several times in the primary documents. The

2007 report *Shaping our Schools, Shaping our Future* has a vision based on intended outcomes, but is not grounded in any particular pedagogical orientation or theory. The main goal is for students to acquire knowledge, skills, and attitudes needed to participate in the world in environmentally proactive and responsible ways (Ontario, 2007, p.4). The education system is supposed to provide the opportunities that allow this to happen, but without a vision that unpacks what environmental education means to the province of Ontario, there is little likelihood that it can support real change. There is mention of concepts seen in the literature, but they are not explained, such as experiential learning and futures thinking (Ontario, 2007, p.5).

However, some progress is seen with the development of the 2009 policy framework *Acting Today, Shaping Tomorrow*, which suggests that goals and processes of environmental education be determined locally, and that environmental education be locally relevant, address local issues, involve stewardship, and impart skills for community-based decision making (Ontario, 2009, p.4). This suggests an orientation close to place- and community-based education, therefore the literature on place-based education should be included explicitly. Place-based education aids in stewardship goals as well, because it is hypothesized that an emotional attachment to place will lead to care and subsequent desire to protect the places one cares about (Ardoin, 2006, p.119). Processes of attachment are also related to emotion regulation- we seek out place attachments in order to feel safe, and people often return to favourite places for the purpose of emotion regulation because these places impart a sense of soothing and safety (Johnsen, 2011, p.180).

The EcoSchools "Making Connections: Environmental Literacy" resource helps add more pedagogical grounding because it contains several components of a place-based pedagogy as well as a variety of activities, providing guides for both theory and practice. For example, the "Interpretive Hikes" activity is specifically geared at developing a 'sense of place' and "laying a foundation for an ethic of care and stewardship for the natural world" (EcoSchools, 2011, p.47). In outlining the series of activities designed to improve ecological literacy, additional intended outcomes are- getting students to identify their connections to the Earth, soliciting cognitive and emotional responses, and offering opportunity to reflect through discussions and journaling (EcoSchools, 2011, p.3). This suggests some crossover with mental health and well-being as well, as it is clear that engaging in environmental activities also provides rich opportunities for reflective activities.

A solid pedagogical orientation will be helpful moving forward because goals can be set that elicit outcomes geared at improving both student well-being and health, in the context of engaging with the natural world as citizens and stewards. If this pedagogical approach includes key tenets from ecopsychology and place-and community-based education, student mental health will hopefully improve system-wide but also at the scale of the individual when necessary. Dyment and Reid (2005) encapsulate this idea well by saying, "when green school grounds initiatives are explicitly embedded within national, provincial, and/or school board policies, a strong message is sent that the potential of these initiatives is understood and supported, and that they are a part of a much larger vision of educational reform" (Dyment & Reid, 2005, p.296). This much larger vision

would be one that repositions the natural environment at school as the foundation of teaching and learning.

**Bringing Implicit Associations to Light**

There are so many opportunities for the mutually beneficial integration of ecological health, children's mental health and well-being, and the sustainability of society. Most of the requisite needs for fostering mental health are already embedded within environmental education, displayed through the myriad positive outcomes of spending time in nature for behaviour, emotion regulation, and self-esteem. Beyond this, the many connections between environmental activities and the development of care, stewardship, and personal growth harken to the ecopsychological posit that, in realizing our embeddedness within the natural world, we can address both the ecological crisis as well as our personal crises. Interconnectedness, the heart of ecology, should be at the heart of education.

**Conclusion**

My goal in this research was to consider ways of enhancing the provision of mental health services at school, by integrating the discourses of mental health with those of environmental education and ecopsychology. I chose to do this by delineating three objectives: 1) to make connections between students' well being and their opportunity to access and engage with natural environments, 2) to integrate school ground naturalization explicitly in the goals of the Toronto District School Board's Mental Health Strategy, and 3) to locate and suggest paradigmatic shifts within the Environmental Education and Mental Health discourse that support an ecologically integrated model of health and well-being. There is, at present, a largely untapped potential to further integrate the goals and practices of environmental education with mental health at school. A pedagogical approach to education that acknowledges the deep interdependence of human and ecological well-being could improve the health and performance of students, while also creating the basis for a society that has more sustainable relations with the world around us.

The conclusions of this research arose from looking at primary documents from both the Ontario Ministry of Education and the Toronto District School Board, as well as resource guides from the Toronto and Ontario EcoSchools. These documents have helped to ground the objectives of this research in a local context and act as a springboard for suggesting ways to move discourse forward in new directions. Through the six key themes of safety, literacy, stewardship, resilience, school ground naturalization, and school culture and pedagogy, I have highlighted the ways in which the goals of environmental education can simultaneously aid in achieving the goals of the Toronto

District School Board's new mental health strategy. I now summarize some final thoughts and suggestions for future research.

Theodore Roszak (2001), in looking back on the ten years since the publication of his book *The Voice of the Earth,* wrote about his surprise at finding a plethora of psychological studies conducted on the benefits of nature to mental health and the uniformity of the findings (p.329). In writing this paper, I also came to realize that there was an abundance of work being done by scholars and researchers on the interactions between children, nature, and well-being. However, this data had yet to find its way into current policies and practices within the formal education system. This data is important because it further validates the need to lobby for structural change (Sobel, 2004, p.41). By drawing links between the themes emergent in official documentation from Toronto and Ontario and some of the findings within this body of research, I hope to have strengthened the case for bringing nature back into schools, for the well-being of both students as well as the ecological world.

The TDSB Mental Health Strategy draws attention to some of the deep underlying problems with the world as it is, by voicing the fact that mental health is a serious problem in children and adolescents. Furthermore, that a majority of mental health problems in youth stem from worry and stress about academic achievement reflects a serious incompatibility between the goals of standardized education and the needs and well-being of students. The goals of the system are often disjointed from the life of students in such a profound way that, "teachers are only intermittently able to enlist their [students'] intellects or passions. School- especially its academic requirements- remains a compulsory obligation but not something that touches their lives" (Smith & Sobel, 2010,

p.75). How then, do we attempt to engage students' passions, interest, and abilities? How do we add meaning and value to learning? One recommendation is to ground learning in the environment, both built and natural. When youth are treated like capable and responsible learners and citizens, self-confidence increases, as do motivation, behavior, and attention. Sometimes it seems difficult to believe that the most troubled students suddenly become the keenest participants when their interest is peaked by a hands-on project, or that the symptoms of ADHD can subside after spending time outside and learning in an outdoor context. But research has shown this to be the case on a great many occasions.

Even if the literature were not as robust as it is, I would make a strong case for the precautionary principle, which states that when an activity (or a substance or practice) *could* be harmful to human health or the environment, precautionary measures should be taken even in the absence of evidence that proves a cause-effect relationship (Frumkin, 2012, p.161). Reworked in terms of nature contact, the precautionary principle would state that if nature deprivation may threaten human health, contact with nature should be promoted. This, among many reasons, is good cause to integrate nature into discussions of mental health at school, especially because environmental education can easily disappear into obscurity if it is only viewed as an add-on to the present curriculum and priorities. This is why changing the school culture is so important, and the Toronto District School Board is already on its way to doing so. The recurrent themes found in this research including literacy and stewardship based on knowledge and action, the inclusion of local community context, and the frequent mention of school ground naturalization provide some preliminary evidence for this change. In order to take this

one step further, the school board must present an explicit philosophy that recognizes, at the core of education, the integration (not segregation) of school with life.

By "life", I am referring to the diversity of experiences open to children when the walls of the classroom become diffuse and come to include the surrounding community and the natural environment, because development does not occur in a vacuum. Place has always been a part of education, because no matter how abstract and removed from reality we find the information in textbooks, we are still embedded and exist *within* the world. However, many students are cut off from lived reality once they enter the classroom, and do not have access to rich natural environments because they have been compromised, paved over, or deemed unimportant. Human "progress" is so narrowly focused on the individual human, and not their relationships to the natural environment, that the idea itself denies full human development (Gruenewald, 2003). Hay (2005) even suggests that the habit of frequently changing places (because of work, financial status, or the privilege of mobility) is associated with this conception of progress that has no association with what happens in the world. The stagnant and staid school experience that only focuses on individual academic achievement can, for some, result in apathy, boredom, and disconnection. But don't children have the right to the opportunity to develop a sense of wonder, through a full scope and range of experiences? The natural environment is an affordance that enables such opportunities to occur, but if we destroy nature, we destroy "the wellspring of our children's psychological constructions" (Kahn, 2002, p.286).

One of the most beloved ways of exploring the full range of experiences in childhood is through play. When did play become so looked down upon? Playing is so important

because it is "a means by which children learn without being taught" (Kahn, 2002, p.287), and aids in motor/physical, social, and cognitive development. Playing also offers a reprieve from the adult world, which is always working to constrain and stamp out the wildness and embodied, sensual aspects of childhood. Spots that are hidden or offer opportunities to create a sense of privacy are so appealing to children because, "part of what children see are structures which constrain them. These may include adult values imprinted on the physical and built landscapes in which they live, or the social constraints of the adult gaze" (Matthews & Limb, 1999, p.61). I discussed the dilemma of safety in school gardens and naturalized areas because fear and concern with the safety of the outdoors is one example of how adults structure and impinge upon children's natural predilections. On the one hand, it is necessary for teachers to keep an eye on students and make sure they stay safe and do not get injured, but on the other, in the absence of natural environments close to home, the school becomes one of the last places where outdoor play can even happen.

A school that recognizes these key developmental processes and allows them to occur via structured and unstructured experiences should have explicit policies that reflect these values. However, "most schools operate on a very narrow field of vision in regard to the value of school grounds as formal and informal sites for learning, meaning that they see it mostly as a way to deplete student's excess of energy or as punitive (a place to do chores)" (Malone & Tranter, 2003, p.298). One of the schools in Chawla and colleagues' (2014) study had an explicit goal to promote "the good life in childhood" (p. 12), and one of the ways this was expressed was through students' freedom to play in nature. Imagination can also be used to bring some "life" back to scientific and abstract

learning, by including some hands on experience or excursions into the nearby community (Fettes & Judson, 2011, p.133). The many activities outlined in the EcoSchools resources can help teachers creatively meet Environmental Education curricular guidelines and recommendations outlined in the OME's *"Scope and Sequence of Expectations"* (2010-2011).

This brings me to some final caveats and issues that will continue to be problematic moving into the future. First, it is very difficult for teachers to implement creative place-based, community-based, experiential, and nature-based activities with students. Teachers often do not even know much about environmental education and do not feel they possess enough knowledge to effectively include it in their teaching (Cutter-Mackenzie & Smith, 2003, p.523). This raises the question of how educators are supposed to foster environmental literacy if they do not have the prerequisite abilities to do so. Educators are role models, and those teaching environmental education have a responsibility to provide opportunities for young people to observe the successes of others, and the strategies they used to achieve their goals, allowing children to develop their own sense of competence through these examples (Chawla & Cushing, 2007).

A second large impediment I see is that environmental education is generally considered as an add-on to the already existent requirements. Combined with minimal resources, cutbacks, and the overarching institutional approach to education, catering to the environment becomes a low priority, especially if it involves what appears to be a lot of extra work. But some alternative schools have managed to reformulate their curriculums, while still meeting government requirements, so that the environment becomes more centralized. For example, it could be seasonally based or categorized into

concepts originating in the tenets of sustainability (Smith & Sobel, 2010, p.121). Teacher training is, and will continue to be, a work in progress as environmental education becomes more mainstream.

Thirdly, school gardens and naturalization projects face barriers in both the implementation and maintenance phases, because there are often not enough resources of funding, personnel, and time to keep gardens flourishing. The continued involvement of key teachers or staff members can never be guaranteed, but setting up garden clubs with wide membership can help ensure that there are always a few people capable of filling leadership positions and momentum. The EcoSchools certification process also helps to keep these projects at the forefront, because certification occurs on a yearly basis. However, many school gardens still rely on grants and funding from institutions and non-profit organizations, which means they remain on shaky ground from year to year.

In reviewing the literature on school gardens and naturalization, place-based education that focuses on sustained contact with local places, and the benefits of nature, a recurrent question emerges- is this enough, or do children need to experience wild or "pristine" nature in order to become ecologically attuned and fully developed humans? Do programs that take place in wild nature produce stronger results? Nature and wildness are certainly not synonymous, but ideas about what constitutes wilderness, and if humans need it, comes up frequently in both the ecopsychology and environmental education literature. Paul Nahban, Stephen Trimble, John Livingston, David Orr, and Edith Cobb have all stated that children *need* wild places (Fisher, 2013). I believe this is an unrealistic objective that downplays the impressive results of regular contact with local environments. I cannot deny that the view from a mountaintop would elicit great awe and

wonder in me, but what if there is no feasible way to access the mountains, deep forests, sprawling meadows and rivers that captivate and fascinate us? In an urban school context, time, resources, and finances compromise access to wilderness. However, one of the strengths of place-based education is that it diffuses the school boundary to include the local ecology and strongly encourages educators to seek out local nature-based experiences. When education is immersed in the local context, we can attempt to bridge the gap between "wild" nature and manicured garden beds, finding a middle ground, perhaps in a local ravine or woodlot. Therefore, I find it prudent to not let a preoccupation with pristine nature overshadow the many benefits outlined in this paper that have derived mostly from local experiences with somewhat domesticated nature.

In closing, I would like to stress my own personal belief that educators, parents, and adults generally need to learn to value the affective elements of direct experience with nature. Even though it is important to conduct research that investigates the potential of nature to improve physical health, academic achievement, and environmental literacy and stewardship, we must remember that nature makes children *happy* (Chawla et al., 2014). I therefore urge us to rediscover the intimate interrelations between human and ecological well-being, and the potential for these relations to shape our ideas of what it means to live well in the future.

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# Appendix

A) First Cycle Coding

Predetermined Codes:

| Place | Integration | Literacy |
|---|---|---|
| Local | Nature/Environment | Stewardship |
| Attachment | Naturalization | Pedagogy |

Emergent Codes:

| Env.Ed. Embedded in Curriculum | Futures Thinking | Leadership & Accountability | Curriculum Connections |
|---|---|---|---|
| Teaching Resources | Fragmentation (need for framework) | Empowerment of Youth | Gaps in Policy |
| Child Development | Definition of Env.Ed. Needed | Env.Ed. as Priority | Environment as Context |
| Community Partnership | School Culture | Vision/Framework | Environmental Citizens |
| Action | Experiential Learning | Care & Concern | Systems Thinking |
| Student Achievement | Hands-on Learning | Environmental Literacy | Literacy: Skills, Knowledge, Attitudes |
| Outdoor Education | Local Places | Education for Sustainable Dev. | |

*Shaping our Schools, Shaping our Future (2007)*

*Acting Today, Shaping Tomorrow (2009)*

| Policy Framework | Preparing Youth for Future | Informed Citizens | Futures Thinking |
|---|---|---|---|
| Env.Ed. as a Tool for Learning/Action | Lifestyle | Health | Sustainable Ecosystems |
| Education for Sustainable Dev. | Approaches to Teaching/Learning | Inclusivity | No Universal Model |
| Local Context | Human/Natural Systems Interact | Env.Ed as Skill Development | Policy Actions |

| Systems Thinking | Futures Thinking | Teachers: Skill Development | Responsible Practices (Strategy) |
|---|---|---|---|
| Env.Ed. as Integrating Theme | Leadership by Example | Underlying Causes | Symptoms |
| Community Decisions | Env. Stewardship | Student Achievement | Env. Literacy |
| Student Engagement | Reaching Full Potential | Integration | Professional Development |
| Community Connections | Local Needs | Measurable Progress | Goals: Knowledge, Skills, Attitudes |
| Connection: Human and Env. Well-Being | Understanding Connections | Env.Ed. as Whole System Component | |

*Ontario Elementary Environmental Education Curriculum Guidelines (2011 revised)*

| Definition of Env.Ed. Needed | Implementation | Goals: Knowledge, Skills, Perspectives | Environmental Citizens |
|---|---|---|---|
| Literacy-Conventional | Env.Ed. as Embedded | Explicit Env.Ed. Connections | Suggestions for Env.Ed. Connection |
| Outdoor Activity | Physical Health | Physical Health by Physical Activity | Healthy Eating |
| Local Issues | Physical/Motor Development | Use of Technology | Interpersonal Skills Development |
| Human/Natural System Connections | Human Impacts | Understanding of Natural Systems | Mechanistic Orientation |

| Safety (& Variations): | | |
|---|---|---|
| Safe Play | Protection from Elements | Safe Outdoor Places |
| Injury Prevention | Access to Clean Places | Anticipation of Hazards |

| Strategies for Curricular Integration: | | |
|---|---|---|
| Use of Imagination | Play | Expression of Feelings |
| Hands-On Learning | Observation | Care (for Nature) |
| Reflection | Creative Thinking | Exploration |

*Ontario EcoSchools- "Making Connections: Elementary Learning Activities in, about, and for the Environment"*

| Creating Change for Future | Link: Policy Goals to Action | Whole School Involvement | Develop: Env. Literacy |
|---|---|---|---|
| Support Student Cooperation | Support Connection to Earth | Get Students Outside | Reflection: Cognitive/Emotional |
| Learning + Action | Curriculum Connections | School Issues to Action | Connect to Local Habitats |
| Human Actions on Environment | Build Connections with Self | | |

*Ontario EcoSchools- "School Ground Greening Guide"*

| Value of Trees | Trees: Connection to Nature | Trees: Effects on Health | Trees: Effects on Behaviour |
|---|---|---|---|
| Tree Planting | Planting: Learning Opportunities | Planting: Connect Nature & Learning | Shade & Health |
| Shade & Safety | Energy Conservation | Climate Change | Creating Teams for Projects |
| Strategy & Planning Process | Long-Term Planning | Monitoring Progress | |

*Ontario EcoSchools- "Environmental Stewardship Guide"*

| Land Ethic | Ethic of Care | Citizenship Skills | Celebration of Successes |
|---|---|---|---|
| Climate Change | Env. Literacy | Creating Change via Campaigns | Take Action: Recycling |
| Take Action: Waste-Free | Take Action: Planting | Learning + Action | Take Action in Community |

*Toronto District School Board Mental Health Strategy (2013-2017)*

| Student Achievement | Mental Health & Well-Being | School Culture | Integration of MH at School |
|---|---|---|---|
| Literacy | Risk | Resilience | Skills & Expertise Development |
| Physical Env. as Resource | Community Connections | Social & Emotional Development | Stress & Anxiety in Students |
| Reactionary Response | Transformation of Culture | Person-Centered Services | Parents & Community |
| Social Environment at School | Need for Framework | Measurable Outcomes | Prioritization of Mental Health |

B) Categorization and Themes

- see additional chart provided on next page